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RESPONSIBILITY OF THE INSANE—HOMICIDE IN INSANITY.

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[Continued from the July No., 1875.]

As announced in the July number of the JOURNAL, we continue the subject of "Responsibility of the Insane," by a narration of cases of "homicide attempted," by persons subsequently admitted to the Asylum.

These cases are sixty-seven in number, and are classified substantially as in the previous article relating to actual homicides.

I. Those in which the homicidal attempt was the direct offspring of delusion.

II. Those in which the homicidal attempt was made during a paroxysm of insanity.

III. Those in which the homicidal attempt was made by manifestly insane persons, from motives and conditions which might influence a sane mind as anger, revenge, &c.

IV. Those in which the insanity was said to have been developed after the homicidal attempt.

V. Cases of epilepsy.

Of the first class there are fifty-six cases. Four of these, who evidently acted from delusions, successfully concealed their exact import. One of this number never spoke after admission to the Asylum, and died in about six months, and another did not speak for a period of two years. Two of this class were epileptics. Seven made the homicidal attempt during paroxysms of insanity. Two though insane, were apparently controlled by anger. In one case the insanity was recognized some time after the attempt, and while the patient was in jail, under indictment, awaiting trial. This case might be placed under the third class, as his condition was clearly one of chronic insanity; we however prefer to follow the history obtained. One was an epileptic, subject to sudden periods of violence. The other two cases of epilepsy are accounted for under the first classification.

These statistics seem to furnish ample proof that the insane act from motives, which, were the premises correct, might influence a sane mind, and that the real delusion can in most cases be ascertained. The theory of impulsive acts, or impulsive insanity, finds no support in an analysis of clinical cases. Delusion is the motive, which in most cases controls the conduct of the insane.

FORM OF INSANITY.

	Men.	Women.	Total.
Melancholia,	9	11	20
Acute Mania,	14	2	16
Dementia,	12		12
Chronic Mania,	10	1	11
Epilepsy,	3		3
Sub-Acute Mania,	2	1	3
Paroxysmal Mania,	1		1
Paresis,	1		1
Total,	52	15	67

TABULATION

Relating to Sixty-seven Cases of Attempted Hor
to the N. Y. S. L. A., at Utica, N

NO.	SEX.	AGE.	ADMITTED.	HABITS.	HEREDITARY	FORM OF INSANITY.	MODE OF ATTEMPT.	MOTIVE OR DELUSION.
1	Man.	25	Mar., 1846.	Intemperate.	Unknown.	Epilepsy.	By stabbing.	Attacked persons whom he disliked.
2	Man.	43	Aug., 1847.	Temperate.	Unknown.	Epilepsy.	By blows.	Delusion, people trying to kill him.
3	Man.	36	Dec., 1847.	Temperate.	Unknown.	Chronic Mania.	With an axe.	Delusion, parents were inimical.
4	Man.	25	July, 1849.	Temperate.	Unknown.	Dementia.	By shooting.	Delusion of fear and suspicion.
5	Man.	25	Aug., 1849.	Intemperate.	Unknown.	Dementia.	Stabbing with bayonet	In anger.
6	Man.	30	Sept., 1849.	Temperate.	Unknown.	Epilepsy.	By blows and stabbing.	Had hallucination of sight and mistook identity.
7	Man.	40	Mar., 1851.	Intemperate.	Hereditary.	Dementia.	Striking with spade.	In anger.
8	Woman.	31	Apr., 1851.	Temperate.	Unknown.	Acute Mania.	By drowning and smothering.	In paroxysm.
9	Woman.	45	Nov., 1852.	Temperate.	Hereditary.	Melancholia.	By cutting throat.	Delusion concealed.
10	Man.	30	June, 1852.	Intemperate.	Unknown.	Melancholia.	By poisoning.	Delusion concealed.
11	Woman.	54	Sept., 1852.	Temperate.	Hereditary.	Melancholia.	Blow with axe.	Delusion, husband in league with devil and had sold her to him.
12	Man.	25	Dec., 1852.	Unknown.	Not hereditary.	Dementia.	Assault with axe.	Delusion concealed.
13	Man.	33	April, 1853.	Temperate.	Father insane.	Dementia.	Assault with axe.	Delusion that person attacked caused his trouble.
14	Man.	49	Sept., 1853.	Unknown.	Unknown.	Dementia.	By shooting.	Delusion, that people would deprive him of property.
15	Man.	27	Nov., 1853.	Temperate.	Unknown.	Dementia.	Attempts to drown and cut throat.	Delusion, to secure happiness of Heaven.
16	Man.	29	Nov., 1853.	Temperate.	Unknown.	Melancholia.	Assault with knife.	Delusion, that persons were trying to poison family.
17	Man.	25	Dec., 1853.	Temperate.	Unknown.	Dementia.	By shooting.	Delusion concealed.
18	Man.	63	June, 1854.	Intemperate.	Hereditary.	Chronic Mania.	By shooting.	Delusion, that he was to be robbed.
19	Man.	56	Sept., 1854.	Intemperate.	Unknown.	Paroxysmal Mania.	By shooting.	Delusion of plots against life and property.
20	Man.	60	Oct., 1855.	Intemperate.	Unknown.	Acute Mania.	By shooting.	Delusion that he was to be robbed.
21	Woman.	42	Aug., 1855.	Temperate.	Hereditary.	Chronic Mania.	Assault with carving knife.	Delusions of suspicion, concerning husband.
22	Man.	35	Dec., 1855.	Intemperate.	Hereditary.	Sub-Acute Mania.	By shooting.	Delusions regarding property and chastity of wife.
23	Woman.	42	June, 1855.	Temperate.	Hereditary.	Sub-Acute Mania.	With carving knife.	Delusion, duty to make sacrifice.
24	Man.	35	Aug., 1856.	Temperate.	Unknown.	Acute Mania.	By hanging.	Delusion, Divine command.
25	Man.	37	April, 1857.	Temperate.	Hereditary.	Acute Mania.	With axe.	Delusion, duty to make sacrifice.
26	Man.	27	Sept., 1858.	Temperate.	Unknown.	Sub-Acute Mania.	Choking and drowning.	Delusion, to save child from being burned up.
27	Man.	45	Dec., 1858.	Temperate.	Unknown.	Acute Mania.	By blows.	In paroxysm.
28	Woman.	37	Sept., 1859.	Temperate.	Unknown.	Melancholia.	Cutting throat.	Delusion that neighbors were trying to poison, and husband to desert her.
29	Man.	25	Nov., 1859.	Temperate.	Hereditary.	Dementia.	By shooting.	Delusion, that he was king of the earth, and neighbor had wronged him.
30	Man.	23	Jan., 1860.	Intemperate.	Unknown.	Acute Mania.	By stabbing.	In paroxysm.
31	Man.	65	June, 1860.	Temperate.	Unknown.	Chronic Mania.	Assault with axe and fork.	Delusion, Divine commission.
32	Man.	35	Oct., 1860.	Temperate.	Mother insane.	Melancholia.	Assault with knife and club.	Delusions, persecution, and that friends were inimical.
33	Man.	28	April, 1862.	Temperate.	Unknown.	Acute Mania.	Assault with axe.	Delusion, special favor with Almighty.
34	Man.	30	June, 1863.	Temperate.	Unknown.	Melancholia.	Assault with smoothing iron.	Delusion, attempt to poison.
35	Man.	30	Dec., 1863.	Temperate.	Hereditary.	Dementia.	By shooting with gun.	Delusion of plot against him.
36	Woman.	37	Dec., 1833.	Temperate.	Unknown.	Melancholia.	With razor.	Delusion, that boiling lead was being poured into brain of children and herself.
37	Woman.	27	July, 1833.	Temperate.	Unknown.	Melancholia.	By choking.	Delusion, that it ought to die and go to Heaven with her.
38	Man.	42	April, 1865.	Temperate.	Not hereditary.	Melancholia.	By shooting with pistol.	Delusion, that they were going to hang him.
39	Man.	62	April, 1865.	Temperate.	Unknown.	Chronic Mania.	By shooting.	Delusion, that he was being poisoned.
40	Woman.	43	May, 1866.	Temperate.	Unknown.	Melancholia.	By poisoning.	Delusion, that herself and children were to be murdered by husband.
41	Man.	31	July, 1866.	Temperate.	Unknown.	Acute Mania.	Assault with hammer.	Delusion, that he was commissioned of God to kill five persons and resurrect them.
42	Man.	50	Oct., 1866.	Temperate.	Unknown.	Chronic Mania.	Assault with razor.	Delusion, that wife had robbed and poisoned him.
43	Man.	18	Mar., 1867.	Temperate.	Unknown.	Acute Mania.	Assault with axe.	Delusion, of conspiracy and that it was his duty to kill.
44	Man.	27	May, 1867.	Intemperate.	Hereditary.	Chronic Mania	By shooting.	Delusion, that father exercised an evil influence over himself and community.
45	Woman.	53	July, 1867.	Temperate.	Hereditary.	Melancholia.	Assault with knife.	Delusion, that husband was unfaithful and intended to poison her.
46	Man.	37	Feb., 1868.	Intemperate.	Unknown.	Acute Mania.	Assault with axe.	In paroxysm.
47	Man.	66	Sept., 1868.	Temperate.	Not hereditary.	Acute Mania.	Assault with knife.	Delusion, of infidelity of wife, and of being robbed by neighbors.
48	Man.	37	Nov., 1868.	Temperate.	Unknown.	Melancholia.	Assault with axe.	Delusion, infidelity of wife.
49	Woman.	33	May, 1869.	Temperate.	Unknown.	Acute Mania.	By drowning.	Delusion, to consecrate it to the bishop.
50	Woman.	46	June, 1869.	Temperate.	Unknown.	Melancholia.	Cutting throat.	Delusion, children would get sick and die.
51	Woman.	35	June, 1869.	Temperate.	Unknown.	Melancholia.	Cutting throat.	Delusion, that child should die with her.
52	Woman.	32	Aug., 1869.	Temperate.	Unknown.	Melancholia.	By smothering.	Delusion, was not fit to bring up her children.
53	Man.	72	Dec., 1869.	Temperate.	Unknown.	Chronic Mania.	Assault with club.	Delusion, of being poisoned.
54	Man.	68	Mar., 1870.	Temperate.	Unknown.	Melancholia.	Assault with hatchet.	Delusion, of infidelity of wife.
55	Man.	58	Dec., 1870.	Temperate.	Unknown.	Chronic Mania.	Assault with axe.	Delusion, of being poisoned.
56	Woman.	46	Aug., 1871.	Temperate.	Hereditary.	Melancholia.	Attempt to strangle.	Delusion, that she was ruined and everything was lost.
57	Man.	27	Aug., 1871.	Intemperate.	Not Hereditary.	Melancholia.	Assault with knife.	Delusion, that wife hated him and loved another.
58	Man.	29	Oct., 1871.	Intemperate.	Unknown.	Dementia.	Assault with knife and club.	Resisting ejection from a mill.
59	Man.	25	June, 1872.	Temperate.	Hereditary.	Chronic Mania.	Shooting with pistol.	Delusion, he was to be forced to sleep with a young lady.
60	Man.	45	April, 1873.	Temperate.	Unknown.	Melancholia.	Assault with hatchet.	In paroxysm.
61	Man.	28	July, 1873.	Temperate.	Unknown.	Chronic Mania.	Shooting with pistol.	Delusion, of conspiracy.
62	Man.	29	July, 1873.	Temperate.	Unknown.	Dementia.	Shooting with pistol.	Delusion, that his friend intended to kill him.
63	Man.	30	Aug., 1873.	Temperate.	Unknown.	Acute Mania.	Assault with hammer.	In paroxysm.
64	Man	46	April, 1874.	Intemperate.	Not hereditary.	Acute Mania.	Attempt to drown.	In paroxysm.
65	Man.	21	May, 1874.	Temperate.	Hereditary.	Acute Mania.	Assault with club.	Delusion that father would kill him.
66	Man.	36	Aug., 1874.	Intemperate.	Unknown.	Paresis.	Assault with heavy pad-lock.	Delusion, that man had debauched his wife.
67	Man.	35	Dec., 1874.	Unknown.	Unknown.	Chronic Mania.	Assault with sticks, clubs, &c.	Delusion, was subduing evil.

N OF FACTS

Homicide, by persons subsequently admitted
a, N. Y., from 1843 to 1875.

ION.	SUICIDAL, &C.	PARTICULARS.	REMARKS.	RESULT.
m he	Yes.	Daytime, without warning.	Soon began to dement, always dangerous.	Discharged, demented and harmless.
g to	No.	Uniformly preceding fit.	Had depression of skull from injury.	Discharged, demented and harmless.
ere	No.	In daytime.	Very dangerous from his delusion.	Discharged, demented and harmless.
d	No.	Attempted to shoot neighbor with gun; daytime.	Insanity followed scarlatina.	Discharged, demented and harmless.
	No.	Stabbed two fellow-soldiers on different occasions.	Of violent temper, attacks made without apparent provocation.	Discharged, demented and harmless.
ight y.	No.	Made attack on mother and sister and on physician.	In daytime, excited and boisterous after paroxysms.	Died in fit.
	No.	Attempted to kill father while disputing with him.	Uneducated and vicious.	Died after six years.
	Yes.	Daytime, attempted to kill two of her children.	Attempted to jump into the lake.	Recovered.
.	Cut throat.	While in bed at night attempted to cut husband's throat.	Continued strongly suicidal and never spoke.	Died after six months.
.	Cut throat.	Administered opium to wife.	Told neighbor, and asked to be killed, then attempted suicide.	Died.
eague ld her	No.	Daytime, felled husband with axe.	Gave herself up, and requested to be punished.	Discharged, demented and harmless.
.	No.	Attacked father with an axe and fired his barn.	Had had several maniacal paroxysms.	Died after six years.
acked .	No.	Attacked brother and sister-in-law.	Removed by friends but afterward returned.	Discharged, demented and harmless.
vould ty.	No.	Blocked road and shot at every one who passed.	Retained delusion in Asylum.	Discharged, demented and harmless.
piness	Yes.	On various occasions attempt life of his wife.	Inflicted wound of throat.	Recovered.
were ly.	No.	Threatened family, attempted to kill mother with knife.	Removed from Asylum, but was returned.	Removed to another asylum.
.	No.	In second attack of insanity attempted to shoot another with a gun.	Was violent while in Asylum. Never spoke for 2 years.	Recovered.
o be	No.	Shot at passers by, carried two loaded revolvers.	Had manifested insanity for 6 years.	Improved.
t life	No.	Assaulted man with club, attempted to shoot wife.	In Asylum had apoplexy.	Removed to another asylum.
o be	No.	Fired at persons passing his house, barricaded house, resisted arrest with violence.	Had been for years a violent and dangerous man.	Recovered.
con-	No.	Attempted to kill husband in night.	Insanity followed child birth.	Removed to another asylum.
perty e.	No.	Numerous homicidal attempts.	Armed himself with various weapons.	Improved.
ke	No.	Attempted the lives of two children.	Delusion suggested by sermon, Abraham's sacrifice.	Recovered.
and.	No.	Attempted to hang and quarter his child.	Told wife his intentions, who secreted the children.	Recovered.
ke	No.	In the night killed heifer and several sheep, and intended to kill his entire family.	Wife and children awoke and escaped from house.	Recovered.
from	Stabbed himself.	Attempted life of child once by choking, and once by throwing into well.	Insane from sunstroke.	Recovered.
	No.	Assaulted a man, beating him with various weapons.	Fourth attack of insanity, homicidal during each.	Recovered.
were hus-	No.	Attempted to cut husband's throat with butcher knife.	Had been insane for 3 years.	Discharged, demented and harmless.
ing of or had	No.	Daytime; shot and wounded man in the breast.	Had been insane for a year.	Transferred to Asylum for Insane Criminals.
	Cut throat.	In daytime; stabbed four persons.	Was intoxicated at the time.	Became harmless, and after 9 years eloped
ission.	No.	Wounded son in head.	Was eight years in Asylum.	Died.
, and nical.	No.	Attacked father with knife and brother with a club.	Had been insane for 4 years.	Discharged, demented and harmless.
with	No.	Raised axe to cut off head of son.	Said he was going to send son to Heaven.	Recovered.
oison.	No.	Attacked mother and servant girl.	Had lived with, and supported mother.	Discharged, demented and harmless.
t him.	No.	Shot hired man in abdomen.	Wound slight.	In Asylum.
lead brain lf.	Cut throat.	Attempted to cut throat of children, was too feeble from loss of blood.	Desired to be brought to Asylum.	Died.
to die h her.	Hanged and cut throat.	Attempted to kill child.	Efforts to commit suicide persistent and numerous.	Died.
vere .	Stabbed and cut throat.	Shot at sister and brother-in-law.	Sister slightly wounded.	Discharged, demented and harmless.
being	No.	Several attempts on lives of neighbors.	Recevived a shot in leg.	Eloped.
and rdered	No.	Gave chromate of potash in food to husband and child.	Had phthisis pulmonalis.	Improved.
com- ill five them.	No.	In night, attempted life of wife, as the first of the five.	Wife escaped from window.	Eloped.
d rob- n.	No.	Attempted to cut throat of wife.	Delusion continued.	Discharged, demented and harmless.
y and kill.	No.	Attacked father, uncle and aunt, with axe.	Insanity due to fall on head, 20 feet.	Recovered.
xercis- e over ity.	No.	Shot father through the neck.	Retained delusions,	Transferred to Asylum for Insane Criminals.
l was ed to	No.	Attempted to cut husband's throat.	Asserted pork and food was poisoned.	Discharged, demented and harmless.
	No.	Struck sister with axe.	Had fired the house and sister was attempting to escape.	Recovered.
of wife, l by	No.	Attacked wife with knife, and neighbor with pitch-fork.	Second attack 9 months duration.	Died.
f wife.	Attempted to drown himself.	Eloped; made other attempts to kill wife.	Returned to Asylum	Discharged, demented and harmless.
te it to	No.	Attempted to drown her own child of 6 months.	Second attack of Insanity.	Recovered.
uld get	Yes.	Attempted to cut throat of child.	Attempted suicide, to die with children.	Improved.
hould	Cut throat.	Attempted to kill child by cutting throat.	Had been insane for a year.	Recovered.
o bring	Yes.	Tried to smother her child.	Suicidal attempts were persistent.	Recovered.
soned.	No.	Struck wife with club.	Threatened and assaulted various persons.	Discharged, demented and harmless.
of wife.	No.	Attacked wife who escaped to another room.	Had been insane a year, many delusions.	Recovered.
soned.	Yes.	Attacked son with axe.	Cut daughter's arm severely.	Improved.
ruined lost.	Yes.	Attempted to strangle child with garter.	Cut off her own hand.	Recovered.
ted him	Cut throat.	Stabbed wife in arms and abdomen.	In second attack, attempted life of wife.	Recovered.
n a mill.	No.	Stabbed man with knife.	Was knocked down by club and secured.	Transferred to Asylum for Insane Criminals.
forced g lady.	No.	Barricaded door of room, fired shot at friends who tried to enter.	Threatened friends.	In Asylum.
	Yes.	Struck two uncles with hatchet, inflicting severe wounds.	Tried to hang himself with suspenders.	Recovered.
iracy.	No.	Man opposed his carrying away goods he claimed to own.	Controlled by delusions of importance and power.	Transferred to Asylum for Insane Criminals.
riend him.	No.	Shot his room-mate without provocation.	Manifested delusions of fear, was seclusive.	Transferred to Asylum for Insane Criminals.
	No.	Assaulted policeman who endeavored to arrest him.	Barricaded himself in a burning building.	Transferred to another asylum.
	Attempted to drown himself.	Attempted to drown child in cistern.	Made assault on various persons, attempted to burn house.	In Asylum.
would	No.	Attacked both father and mother.	Attacked mother with chair.	In Asylum.
had de- fe.	No.	Fractured skull of keeper, in jail.	Threatened lives of others.	Died.
ing evil.	No.	Attacked keeper in jail on several occasions.	Wandered about country for three years.	In Asylum.

The great number of cases of melancholia among the women, is a noticeable feature of the table.

MODE OF ATTEMPTING HOMICIDE.

By stabbing with knife, bayonet, cutting with razor, &c.,	14
By blows, with axe, hatchet, spade, stick, &c.,	22
By shooting,	15
By cutting throat,	5
By drowning,	4
By poisoning,	2
By smothering and choking,	2
By hanging,	1
Unknown,	1
Total,	67

Sex.—Of the sixty-seven cases of attempted homicide, fifty-two were men, and fifteen were women.

Age.—The youngest was a boy of eighteen, and the oldest a man of seventy-two years.

Eighteen were between twenty and thirty.

Twenty-three were between thirty and forty.

Thirteen were between forty and fifty.

Five were between fifty and sixty.

Six were between sixty and seventy.

Habits.—Forty-nine were temperate in their habits; fifteen were intemperate, and in three cases the habits were not ascertained.

Heredity.—An hereditary tendency to insanity existed in seventeen cases.

Suicidal.—Nineteen cases, eleven men, and eight women made suicidal attempts.

Results.—Nineteen recovered; sixteen became demented and harmless; ten died; nine were transferred to other asylums; five remain in the Asylum; five were improved, and three eloped.

Case I.—Admitted March, 1846. Man, aged 25, uneducated and vicious. Had epilepsy induced by intemperance. Became quarrelsome, considered himself injured, and in a rage would attempt to stab those whom he disliked. At time of admission to to the Asylum, exhibited no marked mental aberration. Soon began to dement; was always a dangerous man; invariably made his attacks in the daytime, and on persons whom he disliked, and never threatened or used violent language. The homicidal tendency was not constant, but at times attended with strong suicidal disposition, which occurred independently, so far as could be observed, of his epileptic seizures. He was discharged after some years demented and harmless.

Case II.—Admitted August, 1847. Man, aged 42, married, the father of five children, common education, not religious, of good moral habits, and an industrious man. Hereditary tendencies not known. For many years had paroxysms of violence, in which he would threaten his family and neighbors; but, upon recovery, was a kind and peaceable man. In one of these periods went to the office of two physicians and attacked them, as he afterwards said, with the intention of killing them, under the impression that they had given him medicines which had injured him. They resisted him, barely escaping with their lives. He was tried, and sentenced to the State Prison for the term of six years. Remained for that time in prison, where his attacks of maniacal excitement were frequent, and during them he was violent, attacking those about him suddenly and furiously.

After his return home these paroxysms continued, with the attempts to kill. His physician then detected symptoms of epilepsy, and, on inquiry, ascertained that he had received a blow on the head some years previously, which had left a considerable depression in the occipital region of the skull. He had "frequently thought of operating upon him, thinking it possible that from the blow some portion of the skull might perhaps be pressing upon the brain."

He was committed to the Asylum upon an order of the Superintendent of the Poor, and for two years was subject to paroxysms of violence, lasting a few hours, in which he frequently attacked those about him. These paroxysms were usually followed by epileptiform seizures. At other times he was uniformly kind and industrious, and having, during his periods of violence, on several occasions injured patients and attendants, he came at length to

anticipate his seizures, and request to be placed in his room, and to have no one approach him suddenly. He experienced at these times pain in the head, a sensation of ringing in his ears, dimness of vision, with a vague idea of impending danger. His violence was occasioned by the delusion that persons were attacking him with the intention of killing him; and on several occasions, while alone in his room, had a distinct sensation of a blow upon the head, when he would immediately begin a furious contest with his imaginary enemies. At the end of six years, during which the violence of his epileptic periods gradually abated, he returned home, demented and harmless.

Case III.—Admitted December, 1847. Patient was an educated man, of gentle and amiable disposition. When he was about thirty-six years old, became changed in character; neglected his work, wandered about, was depressed, and afterward morose and irritable. One morning walked out of the house, returned with an axe, and made a murderous attack upon his parents. Was taken to prison, and soon after brought to the Asylum. Was a dangerous man, and for a long while retained the most revengeful and deadly hatred of his parents. Subsequently became profoundly demented, and was discharged, a harmless, inoffensive man.

Case IV.—Admitted July, 1849. Man, aged 25, son of a farmer in good circumstances, and an ordinarily intelligent boy. After scarlet fever, health was impaired, and at the age of 20 began to began to be passionate, and to entertain suspicions of friends and neighbors. Continued to grow worse, though he worked regularly on a farm. One day took a gun and shot at a neighbor, with the intention of killing him. Was arrested, but considered insane, and sent to the Asylum by order of the court. When received was in a state of dementia, which increased gradually, and he was removed, after a period of three years, a quiet, harmless man.

Case V.—Admitted August, 1849. Man, aged 25, native of Ireland, no education, was a boy of violent temper, and early placed in the army by wish of his friends. While there, and without known provocation, stabbed a sentinel with his bayonet, and then made his escape, and his friends sent him to this country. He entered the army and was frequently refractory, requiring discipline. On one occasion he ran his bayonet into a fellow-soldier, wounding him severely but not fatally. He was brought

before the proper officers, and discharged from service on the ground of imbecility and insanity. He wandered off, and was placed in an alms-house, where he was very violent and abusive. He was sent to the Asylum on an order of a Superintendent of the Poor, and was, when received, laboring under dementia. His dangerous propensities continued for some time, but under the progress of his disease he became so inoffensive as to be removed after two years, from the Asylum.

Case VI.—Admitted September, 1849. Man, aged 30, married, a lawyer, liberal education, religious, and of irreproachable character. At the age of 25, had an epileptic fit, which was followed by others at somewhat irregular intervals; not, however, impairing his mind perceptibly, though depressing his spirits, and rendering him at times irritable. Two weeks before admission, after several fits, became excited and boisterous, and attempted to kill his mother and sister. They fled and closed a door against him, when he spent his fury upon the glass and furniture. He soon became calm, appreciated his condition, and was willing to be confined in an asylum. Remained under treatment for a time and returned home, but the recurrence of a violent disposition towards his family induced him to request his sequestration. Subsequently he became demented, and died at the close of a series of epileptic convulsions.

While in the Asylum was once in the medical office, executing a receipt for rent paid by a tenant, when he suddenly seized a weapon, sprang across the table, and attacked the physician, under the hallucination that he was a man who had once defrauded him, and was present to induce him to yield up some claim to property. He subsequently stated that he seemed to see the man distinctly, and that he heard him speak, and make the request. The physician had not spoken.

Case VII.—Admitted March, 1851. Was an uneducated, vicious, intemperate man, of decided hereditary taint. One day, while disputing with his father about some trifling matter, endeavored to kill him with a spade. Jury found him guilty of an assault with intent to kill, but subsequently he was sent to the Asylum. Was laboring under dementia, and died in the institution in 1857.

Case VIII.—Admitted April, 1851. Wife of laborer who was her second husband, member of church, good habits, common education, mother of three children. After birth of last child gen-

eral health was impaired, and mind somewhat disturbed. Partially recovered, nursed her child for sixteen months, was passionately attached to it; attempted to wean it, and in a few days was seized with acute mania; became violent toward husband, and abusive of her child; tried to drown her second child; subsequently stripped it and put it under the hot stove, and took the eldest into the garden, and attempted to smother it by pressing its face into the ground. Was furious on the way to Asylum, and attempted to jump from steamboat into the lake. Recovered, and was discharged in 1852. Retained a dreamy recollection of her conduct.

Case IX.—Admitted November, 1852. An educated woman, and mother of a large family. Was of an amiable and gentle disposition, but sank into melancholia at the climacteric period. There was a strong hereditary taint in her family. One night she requested to sleep at the front of the bed, which was permitted. On retiring, she drew a small stand to the bedside, and when she supposed her husband asleep, cautiously took a razor, which she had concealed in a drawer of the stand, and drew it across his throat. He, however, had not been asleep, and resisted; she then cut her own throat; she never spoke afterward, but continued very suicidal to the day of her death, which occurred about six months after.

Case X.—Admitted June, 1852. Man, aged 30, a laborer, of intemperate parentage. Was a bad man and a drunkard, but generally provided well for his family, and lived peaceably with them. Had complained for six or eight months of general indisposition; was subject to gastric disturbance; was depressed in spirits and wakeful at night. Two months before admission, without any apparent motive, he gave his wife a large dose of opium; observing its effect upon her, he ran to a neighbor, told him that he had poisoned his wife, and insisted upon being killed. On his neighbor's refusing to comply with this request, he seized a razor and cut his throat. His wife was restored. He was brought to the Asylum, gradually sank into profound dementia, and died. Always spoke of his family with much affection and interest.

Case XI.—Admitted September, 1852. Woman, aged 52, wife of a farmer, common education, religious, good habits, hereditary, mother insane for many years, and other members of maternal branch. Late in life married a widower with several grown-up children. Had occasional domestic troubles; at climacteric period

became depressed in spirits, with impaired general health; sank into a state of melancholy; thought her husband desired to get rid of her; secluded herself much of the time, and frequently laid awake during the night. One morning followed her husband into the wood-shed, seized an axe, struck him on the head and felled him; subsequently inflicted numerous severe blows about his head and face, cutting him horribly; she then gave herself up and requested to be punished; said she had done an act against the law, but had done no wrong; that her husband was in league with the devil, and had sold her to him; that on several occasions in the night she had observed them talking together, and that the night preceding the morning of the deed, the devil had made a large fire in the center of the room and kept it burning a long time, waiting for her to go to sleep; that during this time her husband pretended to be asleep, but at the same time she heard his spirit talking and laughing with the devil and arranging her destruction.

This woman rapidly demented, but retained her delusions. She was subsequently removed by her family and became profoundly demented.

Case XII.—Admitted to the Asylum, in December, 1852. A man, aged 25, a farmer's son. There was no inherited disposition to insanity; at the age of eighteen had an attack of mania, from which it appears he recovered but partially, yet went to school for two years, when he had a recurrence of disease. Was subsequently subject to paroxysms of mania, to the time of admission above mentioned. During one of his paroxysms he attacked his father with an axe, and the same day set fire to his father's barn. On admission was laboring under dementia—was silent, easily controlled, never spoke of his family; when his father or mother visited him, usually answered questions, but manifested no interest; never would disclose the reasons for his violent conduct. Worked steadily, and gradually became more and more demented, and died in 1857.

Case XIII.—Admitted April, 1853. Man, aged 33; of good habits; father was insane. Began to talk of his troubles, and accused his brother and sister-in-law, with whom he lived, of being the cause of them, and under this delusion made a murderous assault upon them with an axe. Was brought to the Institution slightly demented, and after a short time was removed; but his feelings toward his brother and sister-in-law at once returned, and he was brought back. As his disease progressed, the homicidal

tendency disappeared, and he was discharged, demented and harmless.

Case XIV.—Admitted September, 1853. Man, aged 49; was eccentric, morose, and occupied entirely alone, an isolated farm-house; began first to shoot at every one who passed his house; blocked up the road, which happened to be an unfrequented one. Thought that mankind wished to deprive him of his little farm. He wounded no one fatally; retained the same delusions; became demented, and was discharged harmless.

Case XV.—Admitted November, 1853. Man, aged 27, German, member of Lutheran church, of good education, a musician by profession; was married to a lady of great personal beauty, his superior physically, and to whom he had been long and tenderly attached. Some months after marriage he made an attempt to push her into the canal, and also into the river. After several attempts of this kind, she demanded his reasons for such strange conduct; he burst at once into a paroxysm of weeping, mingled with the fondest expressions of endearment, and an obscure reference to the bliss of heaven. She concluded that he was becoming insane, and that, under some delusion, he desired to kill her, and afterwards take his own life; wishing to avoid the shame and despair of such an exposure, she courageously determined to keep the secret, and rely upon her own strength and presence of mind to prevent the accomplishment of his purpose. He was paler than usual, and suffered from headache, but was able to discharge his accustomed duties. He continued his attempts, his wife searching him every night, often finding a brace of pistols, a razor, a carving-knife, then locking the door and securing the key. It occurred to her that traveling might benefit him, and they accordingly started to visit some friends at the West. On board the steamboat, crossing Lake Erie, he was most persistent in his efforts to induce her to walk with him on the upper deck, and did not cease begging to have her do so until midnight, and then cried himself to sleep. Having nothing to do, his attempts only increased in frequency. They retired one night, after a most careful search, as usual; when about half asleep she was aroused by feeling the edge of a razor drawn across her throat. By combining great presence of mind with all the strength she could summon, she escaped with an extensive but fortunately superficial wound; and, to use her own language, "thinking it about time," she brought him to the Asylum. There, one of his first acts was to conceal a razor. His

disease was dementia. He soon recovered, and subsequently acknowledged that his sole and engrossing aim was to kill his wife, and then himself, to secure the mutual enjoyment of heavenly bliss; thinking, as he expressed it with eyes dancing with delight, "if we were so happy, happy here, what would it be in heaven!" His object in concealing the razor was to cut his wife's throat the first time she should be permitted to visit him, and then his own.

Case XVI.—Admitted November, 1853. A clergyman, aged 29, of studious habits. From long-continued mental application, as well as from confinement to an ill-selected and scanty diet, a freak of his eccentric mental constitution, began to experience a gradual impairment of his physical health, and to entertain delusions of the nature of suspicions relating to his clerical duties and his brethern. Attended a meeting of the synod, and on his return his friends noticed him to be laboring under considerable mental disturbance. Declared that on account of his youth he was the object of distrust. Suspected his neighbors desired the separation of his wife from himself, and that they were endeavoring to poison his family. During his residence in the Asylum the delusions connected with those with whom he was associated led to frequent outbursts of violence and rage. Health gradually improved, and his mental condition so altered, that his wife and friends removed him. Soon manifested evidence of a return of insanity; began to threaten his wife and family, who left him through fear, while he remained with his mother. Without assigning a motive, he procured a knife and attempted to kill her; was arrested, and after a brief confinement in jail, was again removed to the Asylum at Utica, from which he was soon after transferred to another asylum.

Case XVII.—Admitted December, 1853. A young man, aged 25, of good habits, and gentle disposition; lived with his widowed mother, to whom he was tenderly attached. He had at one time an attack of insanity, recovered, and remained well for many years. He seemed a little restless; left home, and after several days absence returned with a gun, which he deliberately loaded, and attempted to discharge at his mother; the cap missed, at which he became so enranged, that he broke the gun into fragments. Was secured and placed in jail. His conduct was variable; he was at times noisy and excitable, after which he would become quiet; was filthy in his habits, and refused to walk, talk or eat; made several attacks upon his attendants. While under

observation in the Asylum he continued much in the same condition as is described above. After a residence of two years, during which time he had not been known to converse or express any wish, requested permission to write to his mother. The letter which was written, was both appropriate and affectionate. From this time his improvement was gradual, and he was discharged recovered after a residence of three years. The delusions this patient had so long entertained were never unfolded.

Case XVIII.—Admitted June, 1854. A merchant, aged 68, married, of good education, but of intemperate habits. Began to manifest evidences of insanity six years prior to admission to the Asylum. Hereditary predisposition to insanity existed in the paternal branch of the family. The early indications of the disease were found in his restlessness, and peevishness of manner; disposition to engage in lawsuits; mismanagement of his business, resulting in its derangement and in great pecuniary losses; and in his suspicions of those about him. Under the delusion that he was about to be robbed, he procured arms, and on slight provocation discharged his pistols, which he at first loaded with powder, then with paper balls, and eventually with shot, at passers by. On being arrested and searched, two revolvers, heavily charged, were found upon his person. Had always enjoyed an excellent reputation, but had gradually become passionate, and acquired exalted ideas of property. When it was first proposed to him to go to an asylum, he declared he would commit suicide, but afterwards went without difficulty and willingly. After admission became gradually quiet and easily controlled, and, after four months residence, returned to his family in an improved condition.

Case XIX.—Admitted September, 1854. A farmer, aged 56, of limited education, intemperate in his habits, as well as eccentric and passionate. Gave indications of insanity two years prior to admission. On several occasions attacked his neighbors without provocation. Steps were taken to place him in an asylum, but he made his escape. Returned after an interval, and continued quiet till about one week before his reception, when he attacked a neighbor with a club, injuring him severely. Subsequently attempted to shoot his wife. She escaped by running away. He labored under the suspicion that plots existed against his life and property. After his admission to the Asylum had an apoplectic seizure. He rarely spoke to any one, but was disposed to seclude himself, and devoted the greater portion of his time to reading.

He was regarded as a dangerous man. He was ultimately removed to another asylum.

Case XX.—Admitted October, 1855. A farmer, who had been known as an intemperate, violent, and dangerous man for fifteen years, but during the greater portion of the time had supported himself and accumulated a small property by his industry. Began to manifest indications of insanity about four months prior to admission. His violent conduct was such as to excite the apprehension of persons having occasion to pass his house, as well as his neighbors, whom he was in the habit of threatening with violence. On several occasions fired at persons who passed near his house, under the delusion that he was to be attacked and robbed of his money, and an invention for exhibiting a perpetual motion, which he supposed he had perfected. An officer, with the assistance of a number of persons, went to the house for the purpose of arresting him. It had been barricaded, and a defense prepared with loaded pistols and guns, a handspike, clubs, a basket of stones, an axe, and a large pot of boiling water. He yielded after a desperate resistance. Was confined for nine months, gradually overcoming his delusions, when his friends and neighbors removed him. He finally recovered.

Case XXI.—Admitted August, 1855. Aged 42, mother of several children, of liberal education, member of church, good habits, was at times maniacal, entertained unfounded suspicions of her husband, neglected her domestic duties, secluded herself. She secreted a carving-knife, and in the night attempted the life of her husband. Her case was one of chronic mania, and she was subsequently removed to another Asylum.

Case XXII.—Admitted December, 1855. A carpenter, aged 35, of intemperate habits and bad morals. Gave evidences of insanity nine months previous to this time. Insanity hereditary on paternal side. Became violently insane; fired a pistol at a young man in the street, and subsequently shot at two men riding in a buggy, and made other homicidal attempts. When arrested had a heavily loaded pistol, a hand-saw, and a steel square in his bed with him, with which he made a desperate resistance. He entertained delusions concerning his property, and the chastity of his wife. Returned to his family in July, 1855, in an improved condition.

Case XXIII.—Admitted June, 1856. Aged 42, wife of a captain of one of the Hudson River boats. She was a lady of intelligence, much respected for her amiability and virtues, and for many years a worthy and consistent member of the Baptist church. She was of healthy parentage, though one paternal uncle and two aunts had been insane. Her domestic relations had always been very pleasant.

She resided with her family during the summer of 1855 in a malarial district. Her second child was seized with intermittent fever, and died in August; her eldest son, to whom she was passionately attached, also suffered severely from the disease, and in the following month had a series of convulsions which left him amaurotic. The entire winter was spent in the most devoted and assiduous attention to this child, under the hope, held out by his physician, that his sight would return to him when he had recovered his usual health. After months of care and watchful nursing he eventually regained his previous flesh and strength, but was still unable to see.

On the opening of navigation, she left home with him to submit his case to the oculists of the city of New York, confidently believing that their great experience and superior skill would restore his sight. They, however, pronounced him hopelessly blind. She returned home overwhelmed with grief, feared that she had loved her children too fondly, and in her engrossing affection for them had neglected her duty to her God, who, to punish her idolatry, had taken one away from her, and smitten the other with blindness. In her sorrow she sought the advice and counsel of her pastor, presented to him her view of the affliction, and suggested fasting and prayer, to which she understood him to assent. She accordingly fasted for three days, spending most of the time in meditation in her own room, in reading the Scriptures, and prayer. She was more cheerful on the evening of the third day, but passed a restless night, and on the following morning was more uneasy, felt feverish, and, in the opinion of a neighbor who called upon her, seemed to talk more than usual, and in a hurried, excited manner. During the remainder of the week she was as cheerful and composed as she had been at any time for some weeks previously, though feeling faint from her prolonged abstinence. On the morning of the following Sabbath she attended church and listened to a sermon, the theme of which was the sacrifice of Isaac by Abraham, and returned home greatly excited. At evening, service, as was occasionally the custom for females in her church,

she arose, spoke of her afflictions, the light in which she regarded them, &c. Becoming somewhat excited, and weeping violently and hysterically, she was advised to return home, and did so, with one of her friends, her husband at this time being absent in command of his boat. She could not distinctly recall the state of her feelings, nor how she rested during this night. On the following morning she was detected approaching her children's bed with a large carving-knife in her hand. She was greatly agitated, but at once acknowledged her intention of sacrificing her children, in order to show her submission to Divine will, as Abraham had. Her friends explained to her the manifest insanity of such an idea, and she came to the institution voluntarily. She was pale and nervous, trembling whenever addressed; but under the use of tonics and laxatives rapidly recovered, and soon returned to her family.

Case XXIV.—Admitted August, 1856. Man, aged 35, of temperate habits, and a professor of religion. Having purchased a farm, he was embarrassed in meeting his pecuniary obligations, and applied himself very closely to work. About two months previous to his admission his wife noticed his actions to be unusual, and that he worked and slept irregularly. In this state he undertook the care of a sick person, which impaired his physical strength. Two weeks prior to admission he took one of his children and a dog, and proceeded to the woods, where he hung and quartered the dog. Intended to proceed in the same manner with the child, but, under the impression that he had brought the wrong one with him, returned to his house for another, deliberately telling what he had done and intended to do. His wife secured the children, and he was placed in security till his removal to the Asylum could be effected. The delusion under which he labored, was, that he was directed by God to exhibit a proof of his religious devotion. He remained under treatment seven months, and was discharged in his usual health.

Case XXV.—Admitted April, 1857. Man, aged 37, farmer, member of the Methodist church, industrious in habits, and of good morals. Showed indications of mental disease one year prior to admission. There existed hereditary predisposition. Nine months prior to reception began to neglect his farm and family. The greater portion of the time sat in the house and read the Bible, seldom conversed with any one, and objected to his food for days together. Burned candles during three successive days

and nights. At about two o'clock one morning he left his wife asleep, as he supposed, and went to his barn, killed a heifer, and drew it into a field. He then returned to his wife's chamber, and, after satisfying himself that she and the children were asleep, fastened the doors and left the house. From the house he went to the barn, and slaughtered a number of sheep, and again returned to the house, with an axe, with the intention, afterwards avowed, of killing his entire family. In the mean time his wife had been observing his movements, and had fled to a neighbor's house. He submitted quietly to be taken to the county receptacle for lunatics. When his wife visited him, several days afterwards, he made a violent effort to attack her. He refused food, but usually managed to secrete a portion of that brought to him, and partook of it unobserved. For a period of three months after his admission to the Asylum he maintained a uniform silence. He was discharged recovered, but never disclosed the delusions under which he labored.

Case XXVI.—Admitted September, 1858. Man, aged 27, married, one child, laborer, temperate, native of England. Had been in America eight years, and for three years had suffered much from asthma. Five weeks before admission, while cultivating teasels, was sunstruck, and soon after became excitable, exclaimed "the world was to be burned up." Went home, was sleepless, lost appetite, became taciturn, worked irregularly, became rude toward his wife, attempted life of his child by choking and by throwing it into the well "so that she might not be burned up." Was brought to the Asylum, here was restless, tried to pick locks, to force way out of the ward, and while at dinner made an attempt to stab himself with carving knife. Retained delusion given above for some two months, when he began to improve. After about nine months was discharged recovered.

Case XXVII.—Re-admitted December, 1858. Man, aged 46, married, farmer, temperate. This was the third admission of patient to the Asylum, and his fourth attack of insanity. During each he made homicidal attempts under various delusions, on one occasion he started out to kill a man, as he said, for taking his girl away. At this time he wandered some miles from home, and stopped at a stranger's house. On the door being opened he made a furious onslaught with chairs, flat irons and such things as he could seize. The occupant escaped from the room and soon returned, armed with a club, with which the patient was driven from the house.

He was soon arrested and brought to the Asylum. After about six months he was discharged, recovered.

Case XXVIII.—Admitted September, 1859. Female, aged 37, married, three children, temperate. Patient had been suffering from an attack of melancholia of puerperal origin for some three years; her delusions were of a depressing character; that her neighbors disliked her, and were attempting to poison her, that her husband wished to desert her for another woman; under influence of this she attempted to cut his throat with a butcher knife. Remained in the Asylum more than two years, and was then discharged, demented and harmless.

Case XXIX.—Admitted November, 1859. Man, aged 25, single, school master, temperate, hereditary, mother and maternal aunt insane. About a year before admission, showed first evidences of insanity, dressed himself fantastically, wandered about, developed the delusion that he was the "King of the Earth." He was usually quiet, but for about a month had delusion that a neighbor had wronged him. He threatened him with injury on several occasions, and at last having secretly obtained a gun shot him, wounding him in the breast. After his arrest, the patient wrote several letters to prominent persons regarding the impossibility of legally trying him for his offence, as he was the "King of the Earth." He continued in the Asylum for ten years, became demented and harmless. He was then sent to the Asylum for Insane Criminals.

Case XXX.—Admitted January, 1860. Man, aged 28, married, three children, intemperate, native of Ireland. Gave first indication of insanity about a month before admission. He called upon the priest and demanded a hundred dollars with which to raise an army, and upon his refusal, threatened to kill him. He crossed the street, rang the bell of a house and stabbed the woman who answered the call, in the face, neck, breast and leg. Went down the street and met a woman with a boy, threw the boy into the middle of the street and stabbed the woman in the jaw, breaking the point of the knife, another woman passing by he attacked, cutting her nose and lips. He then returned to the house of the priest, jumped through the window approached, and threatened to kill him. A servant girl interposed and received the blow of the knife in the hand. He was then arrested and taken to jail, whence he was brought to the Asylum. It was

ascertained that the patient was intoxicated at the time of the commission of the homicidal acts. After being arrested he attempted suicide by cutting his throat. He was quiet after admission, gradually demented, and for some years worked much of the time at brick-laying. He became harmless, and eloped after some nine years at the Asylum.

Case XXXI.—Admitted June, 1860. Man, aged 65, married, two children, farmer, temperate; was a case of periodic mania, and had suffered from several previous attacks. Had been insane a month prior to admission, was talkative, incoherent and exalted in his delusions. Attempted to kill his son with an axe and a pitchfork, under the delusion that he had received a divine commission to perfrom the act. Son was wounded in the head. He continued in the Asylum for some eight years, when he died suddenly, from heart disease.

Case XXXII.—Admitted October, 1860. Man, aged 35, single, temperate, mother insane; was from early life a dyspeptic, thin in flesh, and troubled with cough and night sweats. Four years before admission became insane. Developed delusion that the members of his family were trying to injure him, and were his bitter enemies; under this delusion he attempted to kill his father with a knife, and his brother with a club. He remained in the Asylum a year. During that time in a letter to friends, declared his acts of violence were caused by the delusion that he possessed faculties impossible to our nature. He was discharged demented and harmless.

Case XXXIII.—Admitted April, 1852. Man, aged 33, married, cabinet maker, temperate; had been insane about a month, was maniacal, violent, talkative; delusions were of a religious character, that he was inspired, and was in special favor with the Almighty. About two weeks afterward, his wife having left the house temporarily, he went into the yard with his little boy, and said, "Charlie, your mother has gone to Heaven, Frank has gone there, and I am going to send you there too." He laid the boy's head upon the chopping block, and raised the axe to strike, when a neighbor rushed in and diverted the blow. Patient was brought to the Asylum, passed through an attack of mania, and after some three years was discharged, recovered.

Case XXXIV.—Admitted June, 1863. Man, aged 30, single, laborer, deaf mute, temperate had, when eight years of age

an attack of scarlet fever, which left him completely deaf. He lived with, and supported his mother, till the attack of insanity supervened. He then developed the delusion that his mother and the doctor were attempting to poison him. Made others eat of bread before he would touch it; said he saw people coming into the window. He then made an attack upon his mother and servant girl with a smoothing iron, knocked his mother down and nearly killed her, and threatened to kill both, because they intended to poison him. He was brought to the Asylum where he remained some two years, and was then discharged, demented and harmless.

Case XXXV.—Admitted December, 1863. Man, aged 30, married, machinist, temperate, hereditary on paternal side; had been insane for more than ten years, supposed cause masturbation, became very seclusive, would hide from people who came to his place. Was married, while insane, to a person of inferior social station, in the hope it might have some beneficial effect upon his mental condition. After this became suspicious of people, that there was a plot to kill him, and procured a gun and ammunition. One night while preparing for bed, he took the gun and fired it toward his wife, as he said to frighten her. She left the house immediately. The next day he saw one of his hired men leaving the barn, took the gun and fired at him wounding him in the abdomen, said he knew the man was coming to kill him. The wound was slight, and the man soon recovered. The patient was brought to the Asylum, where he now is.

Case XXXVI.—Admitted December, 1863. Woman, married, aged 37, four children, temperate. Was a case of melancholia, arising from ill health; had been insane some eight months and was fully controlled by the delusion that boiling lead was being poured into her own and her childrens' brains. Under this delusion she became suicidal and homicidal. One night she arose quickly from her bed, went in the dark to the kitchen, and then with a razor, previously secreted cut her own throat, nearly severing the trachea. She then attempted the murder of her children by the same means, but was so weak from loss of blood that she was easily secured and prevented from doing further injury. She had an appreciation of her condition, and desired to be brought to the Asylum. She died a month afterward from pyæmia.

Case XXXVII.—Admitted July, 1865. Married, one child, housekeeper, temperate; had been suffering from melancholia

some six months. About two months before admission became suicidal and homicidal, and made many efforts to accomplish her design, by hanging, cutting her throat, and by strangulation, under delusion she "ought to die and get out of other peoples way." Afterward tried to kill her child under same delusion. She continued very insane, and died, after a residence here of six months, of phthisis.

Case XXXVIII.—Admitted April, 1866. Man, aged 42, married, two children, stone cutter, temperate. Insanity was first detected while the patient was absent in a Western State. His wife was informed and had him brought home. He was found to have melancholia, ate and slept little, walked his room much at night, was nervous and agitated, and imagined his food was poisoned. On the occasion of the homicide he went to the house of his brother-in-law, and shot at him and his wife with a revolver. The woman was slightly wounded. He said he did this because they were going to hang him. He then ran into the street and stabbed himself, and afterward cut his throat, nearly severing the trachea. He was brought to the Asylum nine months from the occurrence of the attack. He continued fearful and disturbed for some months, then became harmless and demented, in which condition he was discharged.

Case XXXIX.—Admitted April, 1866. Man, aged 62, married, two children, farmer, temperate. This patient had been insane at various periods for past fifteen years, though he had most of the time managed his business successfully, and accumulated property. The present paroxysm commenced some three months before the time of admission. He had the delusions that that he was being poisoned, that conspiracies were formed against his life, that the doctors were going to cut him up and put arsenic in him. Under influence of these delusions he made several attempts upon the lives of neighbors, by shooting at them with a revolver. Received a ball in his leg from one person at whom he had fired. He was arrested and placed in jail, whence he was brought to the Asylum. He retained the same delusions, and at periods barricaded himself in room, under delusions of fear and suspicion, and was dangerous. After some three years he escaped from the Asylum in a somewhat improved condition.

Case XL.—Admitted May, 1866. Woman, aged 43, married, six children, temperate. Was in feeble health and suffering from

phthisis when her sixth child was born. Soon after developed insanity, was melancholic and depressed, lost flesh, was sleepless and at times incoherent. Became jealous of her husband, said he was having illicit intercourse with her sister who was nursing her. Had delusion that she and her children were to be murdered, that her husband wished her out of the way. She attempted to poison her husband and child by giving them chromate of potash, (which she had heard was poisonous,) in milk and sauce, said she wished her child to die to keep her company. Continued suspicious and fearful, and had much cough and difficulty of breathing, while in the Asylum. After about a year she was removed by husband somewhat improved in mental condition, though the physical disease progressed.

Case XLI.—Admitted July, 1866. Man, aged 31, married, two children, cabinet maker, temperate. After becoming insane he talked much upon subject of spiritualism, developed delusion that he was the medium of Jesus Christ, that he was filled with the Holy Ghost, said there were five persons in the town whom he was authorized to kill and bury, that he might afterward raise them from the dead and make them better. A few nights before he was sent to the Asylum, after retiring, got up, told his wife he was going to get a hammer with which to kill her, as one of the five persons. She escaped from the window to a neighboring house, whence he followed her in a state of great excitement, but was secured before inflicting any injury. He remained in the Asylum, some eight months in a maniacal condition. Was noisy, destructive and violent, and in this state broke out during the night and escaped.

Case XLII.—Admitted October, 1866. Man, aged 50, married, no children, butcher, temperate. Seven years ago received severe fall, striking on back of head. Since that, at periods, complained of dizziness and pain in head. About a year before admission became manifestly insane. Developed delusions toward wife, said she had robbed and poisoned him, and was about to run away from him. Under the influence of these delusions he became violent toward her, and attempted to murder her by cutting her throat. In this he failed, as help was at hand. His violence continued as long as he was at home, and his delusions in regard to her controlled him as long as he remained under observation, more than one year. He was quiet, feeble in body and mind and died soon after his discharge.

Case XLIII.—Admitted March, 1867. Man, aged 18, single, laborer, temperate. Fell from scaffolding to the ground, a distance of twenty feet, and became insane immediately thereafter. Had delusion that all his relatives were conspiring against him, attacked father, uncle, and aunt with an axe, and afterward talked calmly and deliberately of killing them as a duty. He became sleepless, destructive of clothing, obscene in speech, and after passing through an acutely maniacal attack, recovered in six months after admission.

Case XLIV.—Admitted May, 1867. Man, aged 27, single, intemperate, paternal aunt insane. For many years patient had been a persistent masturbator, and the results of this habit were evident in his character and manners, he became shy of women, egotistic, absent minded and irritable. Four years before the homicide he charged his father with doing all he could to pull him down and injure him, because he was likely to surpass his father in ability. Some three years after this, the patient admitted his mind to be disordered, complained of low spirits, and inability to control his thoughts, and consulted a physician. He was advised to travel, went West, led a very irregular life, in drinking and sexual indulgence. He then returned to his home, and the same evening followed his father in the street and shot him. The ball passed through the neck, making a serious, though not fatal wound. He was arrested, and his insanity was so manifest that he was sent, without trial, to the Asylum, on the order of the County Judge. He remained in this Institution for two years, and was then transferred to the Asylum for Insane Criminals. During his whole stay in the Asylum he retained his delusions in regard to his father, and asserted that he was poisoning the food, the air, and having a baneful influence on the health of the whole ward. In speaking of the attempt to shoot his father, he says in a letter, "have learned that I completely severed the windpipe, this latter statement must necessarily be an equivalent for a speedy death, the death of *one of the greatest nuisances* that ever lived, to play with the mischievous tendencies of human nature, occasioning the horrors of the inquisition, lengthened interminably, *tampering with the mental and physical well being of communities through the subtle art of an able lawyer's brain educated in the deep mysteries of cruelty, demoniac in the extreme.*"

Case XLV.—Admitted July, 1867. Woman, aged 52, ten children, temperate, hereditary, mother and maternal aunt insane.

This was the third attack of insanity patient had suffered from in ten years. For three years had been irregular in menstruation, lost blood profusely, and three weeks before admission complained of headaches, became sleepless, charged husband with infidelity, with disposition to poison her, ordered neighbors out of the house who came to visit, and smeared face with molasses, saying it was to draw out the poison. Insisted on having the dog buried alive, and all the hogs and salted pork burned up, to prevent poisoning the neighborhood. Threw the food prepared for the family into the fire, forbade their eating anything, and threatened to kill her husband. Asked him one day to go down cellar with her to examine the pork. Took a large knife with her, told him to look up to God and say he was innocent of putting poison in the pork. After he had done this she dashed at his throat with the knife. He jumped aside and thus escaped injury. Her conduct seemed entirely controlled by this delusion of being poisoned, was sleepless, and soon refused food, lost in strength and flesh, and was thin and feeble when admitted to the Asylum. She remained some ten months demented, and quiet, and was in this condition removed by her friends.

Case XLVI.—Re-admitted February 1868. Man, aged 37, single, laborer, intemperate, had suffered from several attacks of acute mania, arising from the use of liquor, and occurring after a protracted debauch. Was first admitted two years previously and was then violent, destructive, sleepless and acutely maniacal. and had committed violence by knocking a woman on the head with a club. He soon became quiet and returned home, where he continued well till present attack. He drank to excess during the interval, and three weeks before second admission became maniacal, and threatened to kill various persons. He set fire to the house of his brother-in-law, whose family was asleep below and was aroused by the noise of the fire. His sister attempted to go up the stairs, when she was opposed by the patient who struck at her with an axe. This fortunately glanced off without inflicting serious injury. He was arrested, securely restrained and brought to the Asylum. He recovered after six months. Has since had another attack, and is now in the Asylum.

Case XLVII.—Admitted September, 1868. Man, aged 66, married, no children, farmer, temperate, not hereditary. This was his second attack of insanity, had apparently recovered from the first, and became again insane some nine months before admis-

sion. His delusions were connected with his wife and neighbors, said they stole potatoes which he planted, and which did not come up,that they stole his hay and grain, flour, meat, bees, honey, &c. He also accused his neighbors of intercourse with his wife. Under this delusion he attempted to stab her, and attacked a neighbor with a pitchfork. He was quiet after admission to the Asylum, and in about eight months died of apoplexy.

Case XLVIII.—Admitted November, 1868. Man, aged 37, married, five children, temperate, not hereditary, complained of severe headaches, lost flesh and sleep and became melancholic and depressed, at times refused food, entertained delusions that the priests in Germany wished to ruin him, and had secret agents in this country to accomplish this. Said he had lost his civil rights and was of no use in the world, was suspicious of his wife, that she was unfaithful to him, and attacked her with an axe; she parried the blow and escaped, though somewhat injured. On one occasion gutted his room, throwing everything out of the window, and wished to bury it all, said people were in pursuit of him and mistook the shadows of the trees in the moonlight, for persons, said stones in the street were laid there to annoy him. He once plunged into the river and was taken out in an insensible condition. He became a terror to his family, and on this account was brought to the Asylum. For a time he lost in flesh and strength, and was very feeble, but after a few months improved, and was allowed to go out to work, when he eloped. He remained quiet and comfortable, working regularly at his trade for a few months, when he was again disturbed. This time his delusions were more general, including all women, he abused his wife, threatened her life, attacked her with a knife. His wife and children fled the house. He also threatened other women and burned up $15.00 worth of fractional currency, because he said there was a woman's head on it. His neighbors complained of him, and he was arrested, and returned to the Asylum. He remained for more than a year, when he was discharged, demented and harmless.

Case XLIX.—Admitted May, 1869. Woman, aged 35, married, three children, temperate. Had suffered from an attack of insanity previously, among first indications of second attack was an attempt to drown her youngest child, an infant of six months, saying she wished to consecrate it to Bishop Hughes. After a few days she stripped herself and two children naked, and took a walk by the bank of the creek, but was induced to return home.

She became maniacal and violent, destroyed almost all the furniture of her house, crawled about the floor, crossing herself and calling upon Bishop Hughes. On her way to the Asylum, made persistent efforts to denude herself, and tore off much of her clothing. She refused food, was thin, feeble, teeth covered with sordes and tongue dry. She however gained rapidly in both mental and physical condition, and in about ten months was discharged, recovered.

Case L.—Admitted June, 1869. Woman, aged 46, married, five children, temperate. Had attack of melancholia, with depressing delusions. Said her children would all get sick and die, and that all would die together within twenty-four hours. Soon after this seized one of her children, a daughter, and attempted to cut her throat, was prevented by others. Afterward she tried to dash her own brains out against a stone wall. She had an appreciation of her condition, and gave her own history. She was discharged after about nine months, in an improved condition.

Case LI.—Admitted June, 1869. Woman, aged, 35, married, temperate. Had suffered from melancholia for more than a year, and was very much depressed, said she was tired of life and did not wish to leave her boy behind her. She attempted to kill him by cutting his throat, wound severe but not dangerous, then tried to cut her own throat, but desisted before she inflicted severe wounds. Within a month was brought to the Asylum, where she recognized her condition, and said that at the time she was insane. She was thin and anæmic, but regained her health, and in a few months was discharged recovered.

Case LII—Admitted August, 1869. Woman, aged 32, married, sixteen children, temperate. She became insane some four months before admission, was melancholic and depressed, attempted suicide, and also tried to smother her child, saying she was not worthy to bring up her children; was sleeping irregularly and eating sparingly. In about two months she regained her usual health and was discharged, recovered.

Case LIII.—Admitted December, 1869. Man, age 72, married, eight children, farmer, temperate. Had been insane for more than two years. He was at first uneasy and discontented, and afterwards irritable and fault finding, and developed the delusions that his family were trying to poison him and wanted to kill him. In-

fluenced by this delusion, he several times threatened to kill his family, and on one occasion attempted to take the life of his wife by striking her with a club. He was discharged after a few months demented and harmless.

Case LIV.—Admitted March, 1870. Man, aged 63, married, four children, farmer, temperate. Was a hard working, respected citizen; about eighteen months before had an attack of typhoid fever, and six months thereafter, while convalescing, became insane. He was controlled by the delusion that his wife was unfaithful to him, and demanded she should acknowledge this and beg his pardon. To induce her to do it, he swore at, threatened, and finally abused her. He was taken to the County Asylum, from which he broke out, caught a horse, and with only a halter, drove home, some six miles. The day was severely cold, and he froze his hands and was much chilled. He became violent toward his wife, and attacked her with a hatchet. She escaped from him, and he was immediately arrested and brought to the Asylum. Was gloomy and depressed, fearful he would lose all his property. He regained his health rapidly, and was discharged, recovered, after about six months treatment.

Case LV.—Admitted December, 1870. Man, aged 58, married, six children, carpenter, temperate. For some four years a change was noticed in his disposition, he became morose and irritable. This gradually increased, and about two years before admission he developed delusions in regard to his wife, was jealous of her, said she had been unfaithful to him, and the children were not his, but belonged to some other man. Told her friends she was a bad woman, and had slept with her father. His son returned home after a somewhat protracted absence, and the father accused him of having come to poison him and ordered him out of the house. Upon his refusal to go he seized an axe and made an attack upon him. The son evaded the blow which took effect upon the arm of a little daughter, injuring it severely. Before the papers for sending him to the Asylum were made out he made a second attack upon his wife and son, with a poker and knife. Did no injury however. Patient remained in the Asylum some three months, when he was discharged, improved.

Case LVI.—Admitted August, 1871. Woman, aged, 46, married, housekeeper, one child, temperate, father insane, and husband feeble-minded. Patient was a nervous, excitable woman, had

been married some five years, and had a child of nearly three years of age. About eight months before admission, first change was noted. She was a called a "little flighty," and from this condition became gloomy and melancholic; said she was ruined in character, and that everything was lost. This delusion fully controlled her, and under the influence of it she attempted to strangle her child with an elastic. It was decided to bring her to the Asylum, but while the papers were being prepared she eluded vigilance, and with a knife, cut off her left hand at the wrist. She lost much blood, became reduced, feeble and anæmic. She afterward refused food, was noisy and sleepless, and at times frenzied. Under tonic and supporting treatment she improved, and after one year was discharged, recovered.

Case LVII.—Admitted August, 1871. Man, aged 27, married, no children, machinist, native of Ireland, intemperate. For two weeks had been losing sleep, and been troubled with noises in his ears. Soon after, entertained delusions that he was being poisoned, that medicine was given him to make him crazy, that friends intended to injure him, and went to a hotel to lodge. A few days before admission, attacked his wife under the delusion that she hated him and loved another. Stabbed her in both arms and in the abdomen, inflicting severe wounds. A homicide was prevented by the interference of a brother. He then attempted to cut his own throat, and when admitted had a large suppurating wound in right side of neck. In the struggle to prevent his committing suicide, cut his hand severely. In the Asylum he was very melancholic, refusing food and opposing care. Regained flesh and strength, but retained delusion in regard to friends for some months. He, however, fully recovered in about two years, and was so discharged; he continued well, till the spring of 1875, when he had another attack. This was marked as the other one, by delusions of the infidelity of his wife, and improper intimacy with his brother. He became talkative, excitable, and began breaking glass and crockery in the house. Friends gave the alarm and he was arrested by the police, and conveyed to the station house, whence he was brought to the Asylum, where he now is, improving favorably.

Case LVIII.—Admitted October, 1871. Man, aged 29, single, laborer, intemperate. Was working in a saw mill. Went on a drinking bout, became intoxicated, returned to the mill, was troublesome, and being recognized as a dangerous man when

drunk, was ordered away, and told not to come again. He came the next day, and refused to leave. An attempt was made to eject him, when he drew a knife and stabbed a man. Another one knocked patient down with a club, when he was arrested and lodged in jail. After some three weeks he complained of being sick, became morose, and shortly after destructive of furniture and clothing, refused food, and at times for a week ate nothing, did not converse for days together, complained of pain in his head and a sense of weight at vertex. About three months after commitment to jail was brought to the Asylum, on a criminal order. He was thin, face deeply congested, reticent for a period, then became talkative, repeating same question, demanding to go home, was foolish in his movements and conduct, restless, walking about all the time, was then destructive of clothing, careless in dress, and subsequently entertained the most marked delusions, that he was the Holy Ghost and the only true Son of God, and was worth $17,000, that his room was entered at night, and his person improperly handled. These and other delusions controlled him, during his stay in the Asylum, for somewhat more than two years. He was then transferred to the Asylum for Insane Criminals.

Case LIX.—Admitted June, 1872. Man, aged 25, single, farm laborer, temperate, father and maternal aunt insane. Was precocious as a boy, and physicians advised against his going to school, or applying himself to studies. He suffered much from neuralgia, and for some three years before admission, had given evidence of mental disturbance, was talkative and excitable, especially in religious meetings, which he attended very regularly, and read the Bible almost constantly, trying as he said to commit it to memory. Was irrational in speech and conduct, swimming his horse in the river, and running it through the streets, and attracting attention of people by his peculiar actions. He gradually became more disturbed, for some two months was sleepless and suspicious, at last entertained the delusion that his parents intended to put a sewing girl, who was working in the house, into his room to sleep with him. He obtained a loaded gun and pistol, barricaded the door of his room with the bedstead, and fastened himself in with ropes and sticks. When his friends attempted to force the door, he fired four shots of his revolver at them, but finding opposition useless, threw on his clothing, and attempted to jump from the window. He however was prevented, arrested, placed in irons, and soon after brought to the Asylum. He has remained

here ever since, been quiet, orderly, and industrious, but retains his delusion, and refuses to go home with his friends.

Case LX.—Admitted April, 1873. Man, aged 45, single, farmer, temperate, was very deaf. Patient lost sleep in the care of his father, who was ill and subsequently died. About four weeks before admission, became gloomy and disturbed; was very talkative and suicidal, attempted to cut his throat and to hang himself. He was closely watched but not restrained till after the attack upon his uncles, with whom he lived. He seized a hatchet and struck one on the back of the neck, and the other on the forehead, making ugly wounds. From this time, for some two weeks, was restrained by being tied with ropes. He improved in the Asylum, and after one year was discharged, recovered.

Case LXI.—Admitted July, 1873. Man, aged 28, married, farmer, temperate. Patient was a soldier in the late war, and while in the service, suffered from rheumatism and chronic diarrhœa, and never regained former good health. He read and studied the Bible a great deal, as the embodiment of the higher law, and upon this study based his claim to being an educated and superior lawyer. For three or four years had entertained this delusion, and during this time had neglected his legitimate work, claiming he was fully engaged in legal business. He went about talking to people of legal matters, and serving papers upon various persons of an incoherent and peculiar character, much to their annoyance. Was recognized by people generally as a lunatic. He attended an auction, and having bid off some articles, gave his note for them, which was worthless. The patient was about to take possession of them, but being opposed by the owner, attacked choked, and upon his attempting to escape, fired at him with a revolver. For this he was arrested, placed in jail, where he was noisy and sleepless, and thence brought to the Asylum, on a criminal order. He had exalted delusions of his own power, asserted he had direct communication with God, was noisy at night, talkative, and refused medicine, and at times food. After about six months he was transferred to the Asylum for Insane Criminals.

Case LXII.—Admitted July, 1873. Man, aged 29, single, harnessmaker, temperate. Had the reputation of being a quiet, industrious and orderly man. His insanity had not been generally recognized, prior to his arrest for shooting at his room-mate. This occurred one evening, and was without provocation. Patient had

some words with him, and upon receiving a reply which he considered sarcastic, drew a pistol and shot at him. He was tried and acquitted on the evidence of his friend that he was not in his right mind, that he was suspicious, said people pointed at him and talked about him, and that he had considered him dangerous for some days before the shooting. He was pronounced insane and sent to the Asylum upon a criminal order. Here he was reticent and seclusive, could not be led into any lengthy conversation, and presented the appearance of chronic insanity. There was no change in his condition, and after six months he was transferred to the Asylum for the Criminal Insane.

Case LXIII.—Admitted August, 1873. Man, aged 30, single, shoemaker, native of France, intemperate. Patient had been in this country but a short time and nothing was known of his previous history. He set on fire a house which he had rented, and while in the burning building resisted arrest, assaulted the officers with a hammer, and was furiously maniacal. He was captured and taken to the County House, whence he was brought to the Asylum. He continued noisy and maniacal during his whole residence here of eighteen months, when he was transferred to another asylum.

Case LXIV.—Re-admitted April, 1874. Man, aged 46, married, four children, shoemaker, used liquor and tobacco to excess. Patient was discharged from the Asylum recovered, about six months before present admission. On his return home renewed former excesses, became insane, threatened to kill his wife, and tried to drown one of his children in a cistern. Afterward he set fire to some books and papers in his attempt to burn his house, and also tried to drown himself. When arrested opposed officers with a pair of tongs. Was brought to the Asylum. Here he continued noisy and maniacal, careless in habits, talkative, mistaking identity of people, for some weeks, when he became quiet and improved in condition. After a short time he relapsed and passed again into a maniacal state, but is now quiet and orderly though still insane.

Case LXV.—Admitted May, 1874. Man, aged 21, single, farmer, hereditary, paternal aunt insane, temperate. Had been a hard working young man, of good habits, and made no complaint of illness. The first indication of insanity, was in his following a neighbor home from church, saying some one was going to kill him, and he was

afraid to go home. He, however, upon the solicitation of his neighbor, went home, where he packed his clothing, went into the fields, and remained out over night. He returned home, but at the same time, asserted his fear of injury from his father. On the following Thursday, he became noisy, excited, and maniacal, and then attacked his mother with a chair. The father interfered and received several severe blows on the head. His brothers prevented a more serious injury, and restrained the patient by tying him on the bed. He was kept restrained, till brought to the Asylum. Here he asserted he had been dizzy, and lost sleep for the week previous; that he thought his mother was going to poison him, and that his father was going to kill him. He passed through an attack of acute mania, which was characterized by suspicions, and violent conduct toward attendants. He is now in the Asylum, quiet and demented.

Case LXVI.—Admitted August, 1874. Man, aged 56, married, five children, laborer, intemperate. He had borne the reputation of being an imtemperate, vicious man, and had spent the season in the County House; was arrested, wandering about the streets in a drunken condition, and placed in jail. Here he developed delusions, regarding the chastity of his wife, became maniacal and violent in threats and actions, and fractured the skull of his keeper, by throwing a heavy padlock at him. He was sent to the County Asylum as an insane man, where he was violent in speech and action, and made homicidal attacks upon his keeper; thence he was committed to the Asylum at Utica. After admission said he tried to kill the keeper because he was violating the chastity of his wife, in an adjoining room. He soon developed delusions of wealth and power, presented the marked physical characteristics of paresis, gradually failed, and died in about six months.

Case LXVII.—Admitted December, 1874. Man, colored, aged 35, widower, barber. Is a heavy, strong man, and has been insane for more than three years, and during this time has been in several jails, committed for exposure of person and like offenses. He says his business has been "subduing evil," that he has been trying to subdue the world, that he never killed any one directly, but that he had subdued evil, and the subject died, that he owns all the money in the world. While in jail he was strongly homicidal, and under the influence of delusions given above, made violent and

furious attacks upon his keepers, on one occasion when arrested, with a sled stake, again, while in jail, with a slat from his bedstead, at other times with his fists. He inspired such fear that though handcuffed, for days, no one dare approach him. When arraigned for exposure of person, was found to be insane and sent to Asylum, brought by sheriff in shackles and handcuffs. Since admission has been at times violent, under control of same delusions, but has been watched too closely to permit of any serious injury to others. He is still in the Asylum.

ON THE VICARIOUS FUNCTION OF THE CEREBRAL HEMISPHERES AND CONVOLUTIONS, CONSIDERED IN RELATION TO UNILATERAL WOUNDS OF THE HEAD AND INSANITY.

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Among the insane, the delusion of double personality is much less common than the loss of self identity, and the delusion of metamorphosis into some other person, or possession by some spiritual or superhuman influence or power. The lunatic often imagines himself transformed into God, angel, devil, or into some earthly hero, potentate, sage, or other character, but seldom fancies himself more than one of these characters at once. He generally has a name and a mission; as Christ he is the "Savior of the World" and the "Prince of Peace," as the Archangel Gabriel, he leads the angelic hosts, and ministers comfort and sympathy to his fellow patients, whom he is usually consistent enough to imagine, when in the height of his delusional exaltation, to be winged denizens of heaven, or in the name of his satanic majesty, he is full of suggestions of evil, making mischief in an infinite variety of ways, and "raising the devil," as the attendants sometimes say "in the hospital."

In the character of a Wellington, a Napoleon, or a Socrates, he passes his time in re-enacting imaginary history; unconsciously to him, time is rolled backward in its flight, and amid the scenes of other days, before ever he was brought forth, he enacts in *propria persona* these or other similar characters, long passed from life's stage.

Singularly inconsistent, the millionaire, monarch, by reason of his money, "of all he surveys," blandly begs a chew of tobacco instead of commanding some one among his retinue of servants to procure him the desired narcotic, and the Savior of the World, who but a moment before has asserted that he compassionately died for your sins, joins the man of money in soliciting a "bit of the weed," and forgetting his fancied divinity, lustily damns you after the manner of the most profane of mortals, for your polite refusal to violate the rule of the hospital. The "Iron Duke" and the "Little Corporal" forget the haughty demeanor which they assume as characteristic of these great personages and condescendingly fraternize for a small personal favor, or coveted trinket, and the philosophic and sedate husband of Xantippe, will demonstrate the truth that,

> "A little nonsense now and then
> Is relished by the wisest men,"

in a lunatic asylum as well as in the world without, which denominates itself wholly *compos mentis*.

You may see devil and duke, heathen sage and christian philosopher, seated around a common table, quietly engaged, like ordinary mortals, or rather more quietly than ordinary mortals, in common games of cards, dominoes, checkers, &c., and the poet, who in his insanest transport despises filthy lucre, or the warrior ceasing "for the nonce to fight his battles o'er," stoop to take a hand and conquer, if possible, in the same game, or to bet imaginary ducats, dubloons or greenbacks on their favorite player, deciding sometimes whom to venture their money on, after ascertaining the one who beats. But with all the inconsistencies and vagaries which usually characterize the insane, who possess delusions, the rarest of all is for the patient to regard himself as two distinct persons at one and the same time. An in-

teresting case of this kind was reported by Dr. Joffe, to the Society for Psychiatry and forensic Psychology in Vienna, in 1870, and appears in the *Journal of Psychological Medicine*, for July of same year, occupying much more space than we here give it. He was a married man, aged 53, healthy in childhood and youth, in manhood had headache and giddiness, was a soldier fourteen years; in encounters with smugglers, received several cuts in the head. His temper was irrascible, he was fond of drink, had hæmorrhoids and constipation for ten years. Disposition serious. His memory failing, he became unfit for service and was discharged in 1861. His pecuniary circumstances caused him great anxiety, and in the same year, (1861,) he exhibited unmistakable signs of mental disturbance. He continually employed the expression "we"—"we will go,"—"we will run,"—"we will do it," etc. The "other" man pulled his ear, plucked his arm, etc. His left arm had spasmodic twitchings. He invited himself to dine with his sister, saying that the "other man" compelled him to be her guest. While eating he said, "I have eaten enough, but the other has not." After the meal he ran out of the house, when arrested, said "the other" was to blame, he was doing what he could to make him stop. Tried to murder a child, assigning a similar cause for the attempt. He rolled into the gutter, thinking he was wrestling with "the other," and finally attempted to commit suicide, imagining he was killing "the other." This brought him to the hospital. The conformation of head was normal, pupils contracted unequally, re-action to light in both limited. Hearing normal, but saw small animals, insects, etc., with left eye, and vision dim in right eye. Tearing pains in left ear and side of face. Physiognomy anxious and expression of suffering. Skin dry

and temperature, and sensibility of body natural. Pulse seventy-eight. Reflex movement to tickling soles of feet prompt. No digestive trouble.

The "other" person was in his left side, under his skin. He called himself the right D—— (D—— was his name,) the left D—— was a rascal and caused all his misfortunes. He sometimes presented the picture of anxiety, dripping with sweat, and holding fast his shirt with both hands, in order as he said, to make himself stop. He had violent impulses to motion, lasting an hour or two, occurring several times in the course of six weeks, which were probably epileptic or epileptoid seizures. After conversing sometime, long enough probably to weary and morbidly disturb the sound hemisphere, his ideas grew confused, and it was impossible to gather any sense from what he said.

He died of dysentery, and during the progress of the disease had no apparent delusions. "The autopsy revealed a thickened dura mater. On the left side of the falx, there was a lamina of bone half an inch long and a quarter of an inch broad. Inner coats of the brain along the course of the vessels were opaque, infiltrated with serum; their veins quite full. Convolutions of the anterior lobes, especially the left lobe, very much thinned on the convexity—*left anterior lobe*, half an inch shorter than the right. Anterior half of ventricle of this side was adherent and hard. Optic thalamus and corpus striatum atrophied—especially the latter. Brain moist, anæmic, tough. Ependyma of the lateral ventricles thickened and granulated, corresponding to the thinned convolutions of the anterior lobe. The cortex was thinned, and the adjacent medulla was indurated to the touch."

Dr. Joffe conjectured that "the striking difference in the condition of the two hemispheres was doubtless a

chief cause in the production of this delusion." But such an explanation does not amount to conclusive demonstration, in view of the now pretty conclusively established fact, that "the mental faculties have been known to be unaffected, where one of the hemispheres was considerably atrophied,"* and otherwise diseased, a single hemisphere sufficing for the intellectual operations. The mind in such cases, not acting insanely, but only with less vigor, and sooner becoming wearied. The mental force of a single hemisphere is the same in kind, as the force developed by the two lobes of the cerebrum.

The fact, however, that one part of this dual lunatic, (the right D——) was always right, and the left D—— the side of the most diseased was always the source of trouble, would seem to add confirmation to the supposition that the hemispheres perform a vicarious function, as we have seen in the cases of injury to one side of the head, as in the case of P. P. Gage, related by Dr. Harlow, of Maine, about twenty years ago, and other similar cases, collected and reported in our standard works on Surgery.

Wigan asserted the duality of the mind in 1844, and Holland and Brown-Sequard and others have since maintained that the brain was a double organ. Griesinger conjectured, that "in the normal state the two hemispheres acted by turns, or that the mental effort is divided between them."

We do not naturally think double, as Wigan maintained, because we have two hemispheres to the brain, any more than we habitually see double, because we have two eyes or hear double, because we have two ears, or breath double, because we have two lungs.

Griesinger mentions a "case of melancholia with ideas of persecution and attempts at suicide, when the

* Greisinger, Cruvilhier and others.

individual was conscious of the fact and declared that he was insane only on one side of the head."

I had under treatment a patient, I. P. M., still in the Asylum at Fulton, Mo., who, in the early stage of his disorder, before he had passed into a condition resembling dementia, insisted that he had two brains, which were the seat of intellection; that one of them, his anterior brain, as he called it, was continually urging him to do evil, (Wigan's idea, though he never read this author,) and that it was all the other brain could do to restrain him from yielding to the control of the bad organ; in fact the bad organ got the better of him, to such an extent at one time, that he attempted to injure the writer with a scrub-brush. He complained of of frontal headache a good deal, and was addicted to constant masturbation. His insanity was the result of irregular life, exposure and typhoid fever during the war, and perhaps masturbation, but of this I am not certain, as this vice is often the result, as well as the cause of insanity. At times he would talk rationally and lamentingly of his misfortune in thus being subjected to a dual government of his head, as a sane man would of any physical misfortune *ex capitis*. He finally became quiet, indifferent about his evil brain as well as his person and surroundings, and lapsed into a state of dementia. The headache of which he complained was rather an uneasy sensation in one of the anterior cerebral lobes, and he asked me several times if I could not operate upon him and relieve him. He never had any cranial injury. He was not very clear as to how he came in possession of a good and evil mind and a brain for each, two distinct mental organs with antagonizing functions. He was conscious of the fact and we could not persuade him that a part of his brain was probably diseased. We reasoned against

conscious impression, and it is as futile to attempt to reason an insane, as a sane man, out of the attestations of consciousness. To both the sane and the insane, these are often higher law than the conclusions of logic, resting upon the same basis in the mind as the evidence of the senses. Delusions are the false attestations of a consciousness disordered by disease. There was nothing perceptibly abnormal about the patient, except his mentality, and a general sluggishness in the performance of all his physical functions, and this fact saves us and you the infliction of a tedious detail of morbid physical minutiæ. He was twenty-five years of age and unmarried.

Insanity, whether its manifestations are single, dual or multifarious, is due to structural lesion or other morbid involvement of the free surfaces, possibly also of the ventricles* of the brain, (though I doubt whether any mentality resides on the ventricular walls) and generally, so far as post mortem demonstrations enlighten us, we find more or less morbid implication of both sides of the cerebrum. It is when both sides of the brain are thus implicated that the mind fails to discover that something is wrong in the head, and I think we shall yet find, that conscious insanity, which we sometimes see in our asylums, is due to morbid implication of one hemisphere principally, and but slight involvement of the other, not more oftentimes, than a slightly, and temporarily disturbed circulation. The same is probably true of incipient insanity, during the initiatory stage, or "the period of incubation" as

*Dr. Malinverni, Prof. of Pathological Anatomy at Turin, gives a detailed description of the brain of a man forty years of age, who died of a gastro-enteric affection. During life he had never exhibited any deficiency or perversion of intellect, and yet after death, the corpus collosum and septum lucidum were found to be entirely absent.—*Med. and Surg. Reporter, October 24th* 1874.

authors have termed it, when the patient first begins to feel, and to say, that something is wrong with his head. We may reasonably suppose that, in this stage, the disease exists on but one side, and has not yet involved the other. The periodic or recurrent forms of insanity, are perhaps best explained, by supposing the brain to be structurally sound on one side, and disordered throughout its whole circulation only during the paroxysm of maniacal excitement.

As there are, beyond doubt, circumscribed centers of muscular movement in the cerebral cortex, as well as in that of the cerebellum, as demonstrated by the experiments of DuBois Raymond, Fritsch, Hitzig, Ferrier, Bartholow and others, so the existence of ideational and emotional centers in the hemispheres and convolutions of the cerebrum, may be believed in, as embraced in the original, but crude conception of a system of phrenology by Gall, subsequently improved by Spurzheim, and maintained by some writers on insanity as true in theory, though not in the minute details of the craniologist. This view thus far sustained, or at least uncontroverted by Hitzig, Ray, Maudsley, and others, and by the post mortem micro-photographic examinations of the brain, by Dr. Gray and others, and in many cases of ante mortem morbid cerebral phenomena, we may now accept as a true principle of mental science. Ideational and emotional centers are as reasonable, if not yet as fully demonstrable, as motor centers.

The assumed existence of duplicate ideational and emotional centers, as well as duplicate hemispheres of the cerebrum, occupying corresponding convolutions on opposite sides of the brain, enables us to frame a more satisfactory explanation of the ideational, emotional and impulsive phenomena, than could be constructed upon any other fact or supposition connected with the physiology of the brain.

The homicidal, suicidal and other insane impulses, as well as the delusions, hallucinations and illusions of the mind, doubtless have as much a local habitation as the discharging lesions of epilepsy, chorea and convulsions, or the phenomena of hemiplegia, aphasia and other forms of paralysis. Though we can not yet precisely locate aphasia, certainly not in the third left convolution of the cerebrum, as this has been destroyed without loss of speech. Dr. Wicks found the central ganglia involved in morbid lesion, in all the cases he examined,* as in hemiplegia, and we do know that the posterior lobes and convolutions are not implicated in this affection, and that the primary seat of epilepsy is in the gray matter of the hemispheres, near the *corpus striatum* as maintained by Ferrier, Hughlings Jackson, and recently confirmed by Dr. Bartholow of Cincinnati, in his experiment on the living human subject.†

If in the case first mentioned, the brain lesion had not extended to the right side in any degree whatever; if neither morbid condition of structure, or sympathetic abnormality of circulation existed; if there was no hyperæmia, no vaso-motor paralysis, in short if there was nothing to cause abnormal action in the other side of the brain, it is probable that the patient would have known that his impressions were normal, and realized that "the other" individual, which so harrassed and annoyed him, was but the creation of a disordered fancy, existing only as the result of disease, but so profound a lesion could scarcely exist in one hemisphere without implicating the other in structural lesion or morbid vascularity. There might have

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* Guy's Hosp. Rep. Vol. XII, p. 174, 1868.

† Experimental Investigations in the Functions of the Brain, by Robert Bartholow, Prof. etc., Med. Col. Ohio. *American Journal Med. Science*, April, 1874.

been very great involvement of the centrum ovale, which behaves sometimes, as Griesinger observes, under morbid involvement, "as though it had no function whatever," along with superficial and ventricular injury of the right side, and yet the man have escaped the delusion that he was two beings.

The accumulated mass of astonishing facts in connection with profound brain injury involving one side of the encephalon, and the persistence of life, with oftentimes no appreciable lesion of the intellect, leaves only this explanation by which to harmonize the facts and resultant phenomena, namely, the most complete mental power possible to an individual depends upon the integrity of the free surfaces of the cerebrum. The functions of the hemispheres are vicarious, and probably the functions of the convolutions of opposite hemispheres, just as the motor functions, are crossed. An injury of the brain may implicate both the centrum ovale and gray matter of one side, modifying mental power only in degree, but not necessarily in kind; abridging the power of mental continence, so that the mind soon becomes fatigued.

When unconscious insanity—that is insanity of which the patient is unconscious—being the ordinary form of the disease—results, both sides of the brain are involved in morbid action or change of structure. Conscious insanity is due to entire or almost entire soundness at times of one hemisphere, or corresponding convolution on the opposite side, so that enough healthy brain structure remains free from sympathetic irritation or congestive involvement on one side, and perhaps in convolutions of the affected side, to recognize the fact of deranged mental action, and to lead to attempts at self-restraint. The recent experiments in faradization of different parts of the brain are not antago-

nistic to this view, and the case of Mary Rafferty, before alluded to, experimented on and reported by Dr. Bartholow of Cincinnati, is not opposed to the position we have taken—the principal, if not the only lesion in her case involving the substance of her brain, was probably in the left side. The post mortem revealed "a thick layer of yellowish white exudation, overlying left posterior lobe, and extending downward on the left side of the falx. There were no products of this kind on the right side. Mary was rather feeble-minded, but returned correct replies to all questions," and gave a correct history of her case.

Every man of large surgical experience has encountered one or more such cases, in which recovery has taken place, without mental aberration, when he anticipated nothing else but the death of his patient.

When we see these cases in the lunatic asylums, as we not infrequently do, after years have passed by, since the reception of the injury, and complete recovery from all the immediate consequences has taken place, the insanity results usually from a hyperæmia or disturbed state of the cerebral circulation, due to the injury only as a predisposing cause, and dependent upon cerebral irritation from some other source as exciting cause of the deranged mental action. Intemperance in alcoholic beverages, opium, tobacco and other agencies which unfavorably influence the heart's action, and disturb the circulation—and moderation is sometimes intemperate excess in these cases—the poison of constitutional syphilis, malarial and contagious fevers, the intemperate use of anæsthetics, intense mental strain of immoderate ambition, and the reaction of disappointment in love, politics, business or the professions, often prove too much for a brain, which like any other, once seriously injured vital organ, should be somewhat favored in after life.

The mind of the patient carries the fractured limb in the splints of caution, long after the surgeon has removed the appliances of his art, but the man who has received a mental wound, which may have healed, but left forever a cerebral scar, oftimes forgets the nature of his injury, and attempts feats of mind which put the brain in a fit condition for the engendering of insanity, even when exempt from traumatic predisposition or hereditary tendency.

When a man has once been *hors du combat* in the battle of life from a brain injury, either so as to have to go to an insane asylum, or so as to have to undergo rest and seclusion and medical treatment for a time, he should re-enter upon the duties of life, bearing in mind, that he has not the full power of resistance to the invasion of cerebral disease, which he might otherwise possess. His mind may be restored, but its continual preservation requires more care and prudence on his part, than if he had never been so unfortunate as to have been injured. He will pay the penalty of folly and violation of nature's physical or moral laws in disordered mind, sooner than his more fortunate fellow.

These injuries augment the chances in favor of insanity in case of cerebral hyperæmia from any cause, as we have said, and are sometimes the beginning of obscure chronic lesions ending in mental derangement, but they do not compromise mentality at the time, so long as the cerebral circulation is maintained in equilibrium throughout the brain, and one side remains perfectly sound. Like hernia, the patient by exercising proper care, may go to the grave with it, and be none the worse through life, for having received the injury. Very many such persons never die of either epilepsy, insanity, or apoplexy, though they sometimes consult us for fullness in the head and apoplectic threatenings.

In these cases, as a great American Surgeon (Gross) truly says, "the mind is not necessarily affected." Large quantities of cerebral substance, as he and others have observed may be lost, and yet the patient make a most excellent recovery. And this is the experience of an humble observer, but one no less confident that he utters a fact of experience.*

Read before the Association of Medical Superintendents of American Institutions for the Insane, at the annual meeting, held in Auburn, May, 1875.

ADDENDA.—The following interesting case, furnished by Dr. Landor, of the London, Ontario, Asylum, since the paper was read, is deemed of sufficient value to have a place here. The writer would be glad to have histories of other similar cases.

LONDON, ONTARIO, JULY 8th.

MY DEAR HUGHES:

On taxing my memory for particulars of the duality case I had under my care, I find that it was in 1850, I first saw the patient, who was a gentleman about 35 years old. He would carry on conversation with an imaginary person inside him, but only one branch of the conversation was spoken aloud. The answers of the double were never uttered, but their tenor could be imagined by the increasing anger and vehemence he exhibited; while the foulest language, and abuse were uttered and addressed to the double, in the second person. I interfered to pacify him often, but it was curious to see that no effect was produced, because he always insisted that I did not and could not hear the insults he suffered under. The quarrel always ended in blows delivered with the full swing of his right arm on to his left face, eye, and nose. "There sir, take that," what "you wont hold your tongue, there's more for you," until the blood streamed down his face, and his

* The cases of unilateral wounds collected, were omitted to abbreviate the paper, and because many of them are familiar to the reader. For the same reason some of Wigan's cases, cited by him to establish his theory of the duality of the *mind* are left out.—C. H. H.

tears ran over with the pain. After the lapse of four or five years this mode of punishing himself ceased, but the conversations did not. I suppose he had either hushed the double into order, or found out that he got the worst of it. He became a very dirty patient, but always insisted that he was a clean and polished gentleman, and that the fellow inside was a dirty, uncultivated beast. He became such a nuisance to the other patients that I requested his relations to remove him elsewhere, and so lost sight of him. It is so long since he was under my care that I can not remember more, nor any thing of his symptoms, such as pulse, eye, or other physical signs. Only the peculiarities are impressed on my memory.

I am of opinion that cases of disorded mind like the above are hardly fair cases of duality. If there were on record any cases where the two veins of thought went on simultaneously and tried each to command the organ of utterance, thrusting each other out of the use of that organ, or cases of confusion of thought such as we see in insanity and that the confusion could be traced to the operation of both hemispheres which had lost the control of the will to guide the predominant hemisphere and silence the other; here I think there would be proof of duality, each hemisphere persuing its independent course of thought. Can ordinary insanity, where the patient wanders from one subject to the other, be produced by any such disorder of both hemispheres and want of will power to guide them? If you can fix any facts, coupled with post mortem changes, then you will do much to produce conviction.

I am yours truly,

HENRY LANDOR.

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NEW CEREBRO-PSYCHICAL DISEASES.*

BY DR. W. A. F. BROWNE,
Ex-commissioner in Lunacy for Scotland.

It is said that about forty years ago a celebrated English physician uttered the bull, "I discovered cholera and communicated it to the public." But, although about to speak to you of new forms of disease, I am not about to open a Pandora's-box for the benefit of our society, nor do I pretend to be a discoverer of new truths, nor a painter of sensational narratives. My sole object is to introduce to your notice certain affections of the nervous system which have specially engaged the attention of members of my department during the present century. These additions to nosology have not been created by the differentiation into species of well-known maladies, but are constituted by new combinations of symptoms and undescribed pathological conditions, involving large numbers of the human race. A similar task has been from time to time performed by others. By consulting any History of Medicine, especially that by Bostock, appended to "Cyclopædia of Practical Medicine," it will be found that the plague is supposed to have appeared in Europe about 1200. Measles and small pox were noticed so early as A. D. 500, and the sudor anglicanus, hooping-cough, leprosy and scurvy created great alarm in the fifteenth century, in the public and medical mind, but had, in all probability, a much earlier origin. Syphilis again was conceived to have been imported by Colum-

*Read before the Border Branch of the British Medical Association, Dumfries, Scotland, July, 1875.

bus or some other navigator, towards the close of the fifteenth century. It is possible, I conceive, to determine more precisely the periods at which the new diseases, of which I am about to speak, first appeared, or were at least first observed.

GENERAL PARALYSIS OF THE INSANE.

It would be difficult to rest satisfied with the belief that, whatever may be its cause, general paralysis did not exist until about fifty years ago, or that it had entirely escaped the cognizance of physicians, general and special, yet it is certain, that on examining the works left by Pinel and his predecessors, it is impossible to discover any monographic description of this frightful affliction, now so readily detected and diagnosed; although these distinguished men had, for long periods, access to all the experience afforded in Asylums for the Insane. It is true that allusions may be found to the monomania of pride and ambition, and paralysis in alienation, but the combination of such factors, which forms the gravamena of this fatal affection, is not mentioned. It is equally certain, that until 1822 no published record upon the subject had appeared, when M. Bayle wrote his treatise on "Meningite Chronique," although he had seen cases so early as 1818, when a medical assistant in Charenton. In 1826, there appeared the valuable monograph "Sur La Paralysie des Aliénés," by the distinguished Calmiel, who still lives to enjoy the rewards and honors of a noble and useful career. I saw the disease in Paris in 1832, but did not recognize it in this country until 1839. In 1843 it was detected by Dr. Luther Bell, in America, which suggests, either that there is a vast increase in the number of cases, or that we observe more narrowly and accurately,

seeing that general paralysis is one of the most frequent and most formidable features in our hospitals. It is still rare in our highlands, in Italy, and, comparatively so in America. Calmiel's essay was fertile and exhaustive, but, since his day, what was held to be one and indivisible, is now known to be multiform, and latent or acute, chronic, expansive, and depressive varieties have been recognized. Here it is only expedient to detail those peculiar or pathognomonic symptoms which are characteristic. It rarely attacks before twenty-five; it rarely attacks females—originally they were supposed to be exempted from its inroads. Calmiel gives one female in fifty cases; Esquirol fourteen in 123; Gray of Utica, 21 in 306 cases under his own observation; Bucknill and Burman, in 2,000 male lunatics, found 300 general paralytics; while in 2,000 cases of female lunatics sixty-five were general paralytics. I have never been able to convince myself of the presence of the disease in the female. The incursion has been attributed by most authors to intemperance, luxury, excess; but there is now reason to think that excitement of any kind, whether the stimulus be moral or physical; that even any of the acknowledged causes of ordinary insanity, may eventuate in this species of degeneracy. The premonitory symptoms are generally great elevation of spirits, a trembling tongue and lip, a slipping or shuffling step, impaired articulation, and thoughts, hopes, or visions of wealth or power. The exaggeration of these prodromata into a restlessness, resembling that of intoxication; general tremor and uncertain muscular volition, involving all muscles; and of course greater unsteadiness of gait, defects in oral speech, forgetfulness of classes of words, grammar, even spelling, and loss of facial expression; and into exuberant, incoherent, and inerradicable delusions as

to riches, rank, personal prowess, &c., may be stated as characteristic of what is met with in general practice, while, over the comatose, the convulsive and closing scenes, where seclusion has been resorted to, we may properly draw a veil. Voisin has recently attempted to connect such morbid modifications of speech with special lesions as follows: First, stuttering, hesitation, drawling, forgetfulness of words, &c., with infiltration of the gray matter of the anterior convolutions, as involving intellect and will: Second, jabbering, stammering, &c., with the medulla oblongata; and third, mutism, with paralysis of the tongue and pharynx—but such pathology is at once premature and non-exhaustive. There has been great difference of opinion as to the succession in which these symptoms are developed, but, perhaps an early and minute scrutiny might prove that they are in origin, though not in degree, simultaneous, that unfounded notions of aggrandizement may accompany the lisp or the stutter, as well as when the prostrate moribund sufferer is proclaiming in almost unintelligible language his supreme or divine attributes. While optimism and paralysis of all classes of muscles, with the exception of those of the trunk, may be elected as defining the malady, there are many indications of unhealth which may be grouped around these. Among these may be enumerated insensibility to suffering, sorrow, discomfort, irregularity of pupils, cerebral congestions, alternations of paralysis, theft, as an initiatory sign and the rapid course and termination. Generally, the march of general paralysis is downwards, but there are not merely pauses, arrestments, but even suspension of all symptoms in the descent, presenting an insoluble enigma to all pathologists, from those who hold alterations in structure in cells to those who advocate the excess of phosphoric acid, diseased nutrition,

&c.; and so deceiving even practical men as to lead to the discharge of patients as recovered, who were speedily to pass through the last stages of degeneracy. The duration of the decay has been variously estimated to be from three to thirty years. I have known it to continue for seven years, but the end is generally reached much earlier. Whatever the history, that end appears to be inevitably death Royer Collard had no cure in 1,000 cases in twenty years; Calmiel himself was never successful; Dr. Sutherland imagined that he had saved three; Rodriguey a few, but these may have belonged to the category modestly suggested by Esquirol, who, when recording 472 fatal cases, adds, three recovered, that is to say, passed from the sphere of my observation. General paralysis has fancifully been said to stand in the same relation to the brain that phthsis does to the lungs; there does exist a resemblance in certain features, but especially in this that being the most formidable and fatal diseases to which we are subject, the sufferers in both are almost always supported, strengthened, we may say, illuminated by glorious visions of hope, happiness, recovery.

DIPSOMANIA.

All nations in all times have been addicted to excess in intoxicants. Historians of the middle ages, even after civilization was far advanced, and more recent writers, show that the potations of both periods were as deep and wide as the Zuyder Zee. This gross intemperance, sometimes denounced as a vice, sometimes extolled as a proof of courage and hard-headedness, was always conceived to be voluntary, to be indulged in, or abandoned, according to the interest, the wishes, the inclination, of the reveler—that the drunkard was, in fact, a rational and responsible being.

Even within the reach of my own recollection, when drinking and intoxication among the educated classes far exceeded what is now prevalent, there was no suspicion of the complication of disease, and there were really few or no examples of constant, continuous, instinctive drinking, such as would have justified the suspicion. Perhaps not until the teaching and the writing of Esquirol on the "Monomanie D'Ivrese" 1838, was the medical mind even prepared to admit the existence of a new form of alienation, which presented specific characteristics, and which demanded interference and treatment. Since this announcement, evidence has crowded in upon us with alarming rapidity, scarcely a family, in any community, but has the skeleton dipsomania within its bounds. This subject is now surrounded with an extensive literature of its own. Hospitals for inebriates are numerous, and, even our Legislature, has attempted to deal with the clamant evil. Of all the works, directly or indirectly devoted to the inquiry, what shall we do with our drunkards, the report of the evidence taken before Parliamentary Committee in 1873 contains the most copious and authoritative information. It will there be seen that the investigation is difficult and complex, that there is a network of connate or allied nervous affections, such as delirium tremens, mania à potú, monomania of suspicion, alcoholic dementia, or *alcoholismus chronicus*, which must be separated and eliminated from our analysis, and that the matter under our consideration is the alleviation of a disease, not the punishment of crime or depravity or degradation. That disease may be delineated, even defined, by science, to be involuntary craving for stimulation, to be hereditary, to be connate with other forms of insanity, to be congenital, instinctive, as following physical disease; and, although

all insanity may originate in crime, it attacks the pure and virtuous, even the abstinent; that it follows blows on the head as well as a career of dissipation; and that it is not merely an inordinate propensity, but involves impairment of moral sense, truthfulness, propriety, carelessness of affairs, perversion of the affections, degradation of habits, tastes, &c., and, manifestly, enfeeblement of will and conscience. These psychical indications we conceive to be diagnostic, even when more prominent features are absent. The alarmists now abroad assert, not merely that we may inherit the appetite, but that it is communicable from the mother's milk, which is so often poisoned with alcohol, at the moment when Cousin points to the origin of mental life in the acquisition of the conception of the me and not me; that all our social usages, even innocent customs, plant and foster the growth of the Upas tree which is destroying all ranks and races. I have known the craving arise suddenly in a Quaker schoolboy after taking a draught of cold water; I have known it creep insidiously, serpent-like, among the gratifications of the learned and lofty intellect, and succeed a single or short course of medication; but, wherever the origin may be, the spread of this malady and its congeners is now almost universal. Even in abstemious France, the progress of morbid intemperance is frightful, and has been attributed by Lunier, I think erroneously, to the facinations presented to the soldiery in Algiers. It was roughly calculated in 1870 that about 38,000 drunkards had been committed in England, but, in the same year, 21,000 are reported from Liverpool. It is obvious that this estimate is a mere return of flagrant cases falling under the notice of the law, that it is not even a gross approximation to the amount of inebriation recognized; and that, if accepting it as a standard, the total must be accepted

as including every form and degree of stimulation, whether under, or beyond, the control of the individual, whether depending upon insanity or immorality. Our asylums afford no reliable information as to the number of dipsomaniacs, or as to the proportion these bear to mere drunkards, or to other species of derangement, as from many such institutions they are properly excluded, or admitted only as coming under the designation of lunacy, and are, therefore, confounded with more distinct forms.

It would be fruitless to follow patients into such retreats, to note the repeated relapses, the disregard of all solemn pledges, the disappointment of all hopes and high resolves, the conversion of the irresistible impulse into acknowledged alienation and physical disorganization. It would be equally vain to speculate upon an uncontrollable tendency, or the introduction of dipsomania as an exonerating element in our legal code, under the pretext of an abolition of will, moral sense, &c., or upon the physiological basis that alcohol pervades the blood, prevents cell change; or even upon the pathological changes described, as saturation of the nervous system with alcohol, a theory which Sir Thomas Watson seems to adopt as giving rise to the craving, an elective affinity between these two factors, or the calcification and atheroma of the arteries, the structural alterations in the liver, these being probably the consequences, not the causes, of the moral perversion. But it is incumbent to direct attention to the legal relations of this perversion, which is repudiated as an exculpation; while mere drunkenness, or the delirium which ensues, are admitted as dissolving pecuniary and marriage contracts; to the total absence of all provisions for this deluded or delinquent class; to the contrast observed in the curability of the affection in Amer-

ica, where from 34 to 50 per cent. of dipsomaniacs are restored to permanent health; and to the lack of success in Britain, where we are sceptical as to curability at all, although Sir Thomas Watson is more hopeful as to future success. It may be that the recuperation of mental strength in new countries may be more permanent than in those which are old, worn out, and exhausted.

LUTHER BELL'S DISEASE, OR TYPHO-MANIA.

The infrequency of idiopathic fever among the cloistered insane led to the notion that they enjoyed an immunity from infectious and epidemic diseases. Typhomania presents no exception to this supposed law, as its discoverer and historians declare that it can be distinguished from fevers, and that, notwithstanding its misleading name, it must not be confounded with the mania succeeding typhus, witnessed in the hospitals of large towns. To identify typho-mania with the délire-aigu of the French, or with typhoid fever, is scarcely justified by the following synopsis of its characteristics:—First. Rapidity of onset, without premonitory signs, often from moral causes. Second. Absence of excited arterial action and intolerance of light, sound, &c. Third. Instantaneous prostration. Fourth. Intellectual wandering, momentarily arrested. Fifth. Hallucinations, always frightful, and scarcely affected by external circumstances. Sixth. Extreme restlessness and struggles requiring restraint. Seventh. There are no sudamana, no petechiæ, no meteorism, and no pathological changes similar to those in typhus. Eighth. The course is acute, short, ending in death, or complete and sudden restoration of reason. Of this unrecorded affection, Dr. Luther Bell conceived that he found forty instances in 1,700 entrants into the asylum of which he

was a superintendent. He further observed that typhomania followed other and distinct forms of mental derangement. The patients all belonged to the affluent classes. He speaks very modestly of "digging this species from a mass of rubbish," from a conglomeration of amorphous appearance. His disciples, subsequently, while insisting much upon the non-infectious nature of the disease and the remedial effects of diffusible stimuli, speak more confidently as to the individuality of the disease as a species of alienation, and have given several additional features to the picture. Among these may be cited the absence of suicidal tendencies, the abolition of hunger and thirst; or if either solids or liquids are taken they are bolted, or swallowed in vulpine fashion; that the exhaustion and physical symptoms are from the first so great as to lead to the belief that the patient is moribund, and so prominent as to cloak and to divert the attention from the morbid mental manifestations, and that this mania was most generally encountered among Irish emigrants coming directly from ship board, where during the voyage they had been exposed to signal privations and unhealthy surroundings, and may have even been within the influence of ship fever.

Typho-mania has been incorporated with our nomenclature by Bucknill and Tuke, 1874, and described by them with the suggestion, however, that it may have been alluded to by Dr. Conolly, in the *Lancet*, in 1845. I have seen this form of alienation in this country, but the comparative silence of American writers upon the subject, who all entertain an enthusiastic attachment to the memory of Dr. Luther Bell, would seem to indicate, that emulating his caution and philosophical circumspection, they have placed the whole matter *sub judice*. This feeling of friendly respect was excited by his long

ica, where from 34 to 50 per cent. of dipsomaniacs are restored to permanent health; and to the lack of success in Britain, where we are sceptical as to curability at all, although Sir Thomas Watson is more hopeful as to future success. It may be that the recuperation of mental strength in new countries may be more permanent than in those which are old, worn out, and exhausted.

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service of twenty years as an officer of an asylum, by his useful exertions in improving the architecture and internal economy of such asylums, by his eminence as a physician and psychologist, and by the close of his life on the field of battle during the late civil war, not from wounds, however, but from pneumonia.

ABSINTHISM OR TOXIC EPILEPSY.

The sugar and water sobriety of France has passed away. Our neighbors denounce their brethren of the military and industrious classes as Bacchanalians. Gratification or oblivion are sought from stimulants of all sorts and strengths, but to a very grave and deplorable extent from the watery extract, cream of absinthe, &c. This national corruption is said to have given rise to groups or genera of neuroses, and particularly to one new and special form, which is, as yet, fortunately, unknown to us. While absinthe was sipped as a liquor, its toxic or intoxicant powers were shown in 1859 to produce delirium, and were more deliberately tested in Bicêtre in 1864. Experience and experiments have since demonstrated that these mainly consist, although differing in combination, succession and intensity, in a feeling of shivering or creeping, then of nausea, in an irresistible craving for stimulants, but, above all, for absinthe, in hallucinations, delirium, in great restlessness and eccentric movements, in shocks of the muscular system, resembling those given by galvanism, and which, it is supposed, mask or conceal the tremors and disturbances of motility of alcoholism; and, finally, and diagnostically, in epilepsy. Great importance is attached to the latter symptom as distinguishing this affection from all others which can be traced to a similar origin. We are told that of 377 maniacs from drinking, admitted into the Parisian asylums in 1870,

thirty-one had suffered from epilepsy; and, of 291 of the same class, admitted in 1871, fifteen had so suffered. While the great majority of French psychologists are of opinion that alcohol may produce delirium, mania, &c., according to the quantity and quality swallowed, little evidence has been recorded that epileptic or epileptiform convulsions have resulted from such indulgence; certain others affirm that all stimulants may be followed by these effects. I have undoubtedly seen convulsions in acute alcoholism. It is probable that this difference of opinion, and, above all, the difficulty of finding patients for examination who had confined their indulgence to ten or twelve glasses of absinthe, habitually led to an appeal to experiment upon the lower animals. In dogs we are assured absinthe, whether introduced into the stomach or injected into the veins, excites delusions, fear, anger, contractions of the muscles of the neck and trunk amounting to epistothotonos and pleurothotonos, and, ultimately, general convulsions and death. One animal under five grammes of the essence is graphically described as, without provocation, rising to his feet, his hair erect, his aspect ferocious, with his fiery eyes fixed upon a bare wall; then as rushing to and fro against an ideal enemy, barking, gnashing his teeth, and then appearing to tear what has roused him to fury, the scene ending in convulsions. When dogs are treated in the same manner with alcohol, the phenomena, both psychical and physical, are widely different. They become slightly excited, rush or reel, or leap to and fro, then pass from hebitude into semi-stupor, comatose sleep; anæsthesia and paralysis succeed, at first confined to the hind, but, ultimately, involving all the extremities, with general relaxation of the body, but never convulsions. It is needless to tell you that we owe almost all the informa-

tion which we possess upon this subject to M. Magnan, the most prominent figure in the meeting of the association at Norwich, and whose advent there, and the subsequent proceedings, have placed the profession upon the threshold of new, and it may prove harassing, legislative interference. Had time permitted, I could have wished to have said a few words concerning phthisical and syphilitic insanity, which, although composite affections, are now exciting much interest; or even to have touched upon loco-motor ataxy, progressive muscular atrophy, glosso-pharyngeal paralysis, Graves or Basedow's and Menier's disease, as all involving less or more psychical manifestations; but your patience and politeness must be already exhausted, and I shall conclude, as public speakers were formerly accustomed to do, with a moral, and to this effect. That, while not entitled to attribute the increase of all these ailments and infirmities to our rank civilization, and material prosperity, we can not be insensible to the fact, that the growth of many is due to our own habits and arrangements, which, in a great measure, are under ur own control.

RETROSPECT OF GERMAN LITERATURE.

BY THEODORE DEECKE.

ANATOMY OF THE NERVE CENTERS.

I. The Ventriculus Terminalis of the Spinal Cord. By Prof. W. Krause of Goettingen.

Archiv für Mikroskopische Anatomie, Bd. XI, Heft. 2, Tafel XIII.

Since the researches of Stilling, Gerlach and others, it is well known that the central canal of the spinal cord, at the point of its transition into the filum terminale, in mammalia, turns towards the anterior longitudinal fissure, while in men towards the posterior, where it was claimed to open. This remarkable difference, however, between men and the mammalia seemed to be so much in opposition to the laws of evolution, that a misunderstanding was supposed to exist in regard to it, and this is in fact true. There is a fifth ventricle in the nervous centers, if we designate that of the medulla oblongata as the fourth. It is situated at the lower end of the conus medullaris, (the tapering lower end of the spinal cord,) and Krause proposes to call it the "ventriculus terminalis" of the spinal cord.

In men, the central canal, at the upper part of the filum terminale exhibits a cylindrical form; at the transition into the lower end of the conus, however, it appears as a transverse fissure, directed towards the posterior periphery of the conus. This fissure corresponds to the lower end of the ventriculus terminalis. Farther upwards the ventricle soon enlarges, and assumes in transverse section, the form of a triangle, the base of which is directed towards the anterior part of the cord. In adults, the length of the ventricle amounts to 8=10 mm; the breadth, to 0, 5=2, 0 mm and the depth, to 0, 4=1, 1 mm. It is, therefore, easily detected by the naked eye.

In the course of its transition into the central canal of the conus medullaris, the transversely situated triangle is changed into one, whose short basis is directed towards the *posterior* commissure. The posterior wall there appears, frequently, a little incavated, so that the roof of the ventricle terminates in two collateral fissures or horns. The supposed opening of the central canal into the

fissura longitudinalis anterior, in mammalia, will easily be understood, considering that the roof of the ventricle, in animals with tails, appears remarkably thickened by the presence of large bundles of sensitive nerve fibres, which supply the skin of the tail. In men, the whole substance at the border of the ventricle, corresponding to the posterior columns, forms only a very thin layer, so that in hardened specimens, to the naked eye, the pia mater alone seemingly lines the roof of the ventricle. By the aid of the microscope, however, Krause easily detected, in all cases, a lining of ciliated epithelium, and, between this and the pia mater, a thin layer of cord tissue: the "substantia gelatinosa," which represents the remains of the posterior columns.

The ventricle was found in persons of all ages, though often obliterated after the fortieth year. Krause explains, in the same paper, his methods of investigation, and recommends the removal of the cord during the first twelve hours after death. He hardens the specimens first in Miller's fluid, then, in a one per cent. chromic acid solution, and afterwards preserves it in absolute alcohol. He also gives a description of a microtome for making successive sections.

II. Contributions to the Knowledge of the Course of the Fibres in the Spinal Cord. By Dr. P. Schiefferdecker.

Archiv für Mikroskop. Anatomie, Bd. X, Heft. 4, Tafel 32-34.

It is an interesting fact that the more we proceed in perfecting the methods of investigation, the more complicated do the structures of the nervous centers appear. It is true our methods of research hitherto have been scarcely adequate, to enable us to give a precise and detailed description of the course of all the fibres in the spinal cord. To Schiefferdecker, who is an assistant of the learned Waldeyer of Strassburg, we are indebted for the following clear anatomical expositions.

The author distinguishes five different courses of fibres.

I. Fibres, which run from a point of the periphery to a group of ganglion cells.

II. Fibres, which connect two groups of ganglion cells.

III. Fibres, which run from a point of the periphery towards one of the commissures.

IV. Fibres, which connect in a vertical direction, the upper and lower parts of the grey substance.

V. Fibres, which, in the same half of the cord, combine two different parts of the white substance.

Ad. I. The author points out; a, large bundles of the anterior roots; b, numerous fibres from all regions of the lateral columns, and c, bundles from the posterior columns, principally from the median parts of the same.

Ad. II. Also three different courses of fibres have been traced, corresponding to the three different kinds of ganglion cells, which they combine, and all of which, *inter se*, are connected by these fibres.

Ad. III. 1. Commissura anterior is provided; a, with large bundles from all parts of the posterior columns; b, those from the lateral columns appear still more numerous; and c, fibres from each group of ganglion cells reach the commissure. The greater portion of all these fibres decussate in the commissure, and bend over into the median regions of the anterior columns, while only a small number of the same, form a simple connection from one side of the cord to the other. 2. Commissura posterior. The fibres, passing through the posterior commissure, are far less in number, and traceable into the median regions of the posterior columns, and into the middle posterior group of ganglion cells. They run, without decussation from one side to the other.

Ad. IV and V. Shiefferdecker gives a minute description of a number of longitudinal sections in various directions, which expose the most complicated structure in clear outlines; but which will scarcely be understood without reference to his beautifully executed drawings. The fibres have been traced up to their finest ramifications, in the grey portions of the cord, into the most delicate network, from which, again, bundles originate running in a vertical direction; these combine the posterior and the anterior columns, as well as the laterally situated groups of ganglion cells. 1. Large bundles of fibres are traceable from the posterior columns to the anterior groups of ganglion cells; there, forming a network, and then passing out of the bundles. 2. Fibres from the posterior columns unite the middle posterior groups and the lateral groups of ganglion cells, forming here the first network; then proceed to the anterior groups of ganglion cells, forming the second network, or the bundles break out from the cord directly. 3. Fibres of the posterior columns run up to the anterior groups of ganglion cells, and passing through these, combine, without forming a network, with the anterior roots.

A summary of the structure, as far as at present explored, is given in the following:

I. Fibres passing out in different directions from the white substance into the grey regions.

A. Fibres, which originate at the same point, pass over into the grey substance at different heights.

B. Fibres, which originate at different points of the white substance, pass over, at the same point, into the grey substance.

C. Fibres, which belong to the same vertically extending bundles, and which, at the same height, bend over to the grey substance, often divide during their horizontal course in the white substance, towards the right and left, terminating in the grey gray substance, as bundles of different character.

II. Fibres passing in different directions, through the grey substance, for the purpose of connecting fibres.

A. Simple networks, *ea sunt*: 1, primary networks at the border of the white substance, combining the single bundles which have passed out; or 2, secondary networks, which, situated more in the middle parts of the grey substance, combine those bundles of fibres which had formed networks once before.

B. Courses of fibres which combine different large parts of the cord; these are:

I. The fibres of the posterior and the anterior commissures which combine the two halves of the cord.

II. The vertically running fibres of the grey substance which combine parts of different heights in the course of the cord.

III. Peculiar formations, probably for the purpose of connecting fibres of different character: the ganglion cells with the delicate network involving the same.

Considering now, finally, that often even four or five of these connections, referred to in the foregoing, frequently occur in the course of *one* fibre, we may imagine how *manifold* are the conducting elements of the spinal cord, and what a complicated mechanism it represents.

III. The Perivascular Lymph Spaces in the Nervous Centers and in the Retina. By Dr. B. Riedel of Rostock.

Archiv für Mikroko. Anatomie, Bd. XI, Heft 2, Tafel XV, fig 5-9.

To the investigations of Virchow, Robin, His, Fromman, Roth, Golgi, Eberth, Boll, ect., into the lymph ducts of the nervous centers, Dr. Riedel adds some further points of great importance. The explanation of the true structure of the so-called adventitia of the cerebral vessels, by Eberth, after a treatment with a solution of nitrate of silver, and the constant presence of lymphatic elements and other thrown out materials, in these sheaths, has left

no doubt as to their nature and their importance in the economy of the organs in question. Besides the delicate fibrillous processes, adherent to this membrane, as first seen by Roth, Golgi, Boll and others, and which represent the remains of those peculiarly formed connective tissue cells of the nervous centers, Riedel has discovered a system of other processes, true prolongations of the adventitia itself, which, without enveloping a vessel, combine larger or smaller districts of cerebral vessels, mostly forming direct anastomoses, or sometimes small plexuses. They are recognized in uninjected specimens, but more plainly in injected ones, where they are seen as small empty ducts or tubes. They are only attached to the adventitia of capillaries, and may reach a length from 0, 1 to 0, 15, mm. After the discovery of these lymph-anastomoses, Riedel thinks it is not any longer proper to call that enveloping membrane, the adventitia of a vessel, but to consider it as the lining wall of a true system of lymphatics. The endothelium structure of this membrane, which is the same as in other organs agrees with this view. The accompanying drawings of the author leave no doubt as to the reality of his discovery.

IV. On the Adventitia of the Cerebral Vessels, etc. By Dr. R. Arndt of Greifswald.

Allgemeine Zeitschrift für Psychiatrie, Bd. 31, Heft 6.

Arndt discusses some peculiarities concerning the vascular arrangement of the nervous centers. The arteries consist of three membranes: the intima, the muscularis, and the adventitia; the veins and the capilaries, of two: the intima and the adventitia. The author advocates the lymphatic nature of the space enclosed by the adventitia, and describes peculiar cells attached to the same, which end with long and delicate fibrillous processes extending into the surrounding parenchyma. Concerning the economical functions of these cells, Arndt believes that they serve as exchangers of nutrient fluid, partly active and partly mechanical, by constituting a kind of a drainage system. Assuming this then, he calls renewed attention to the much discussed perivascular lymph spaces of His. "These are claimed to be artificial products." Arndt says, "they are, but artificial products created by nature itself, and for certain states of things, so constant and often occurring, that they seem normally connected with these. Otherwise they are lymph spaces, as well as those of Virchow and Robin, inside of the adventitia, because they originate in consequence of a stag-

nation of lymphatic fluid. But, while those spaces of Virchow, etc., serve as channels for the discharge and the carrying away of lymph, these represent storages for collecting the surplus." If this means, that they are pathological formations, we do not hesitate to indorse the author's view, which does not seem so very much in opposition to the opinions, advocated by Boll, Golgi and others.

V. Researches into the Anatomy of the Nervous System. By Prof. Alex. Key and Dr. G. Retzius of Stockholm.

Archiv für Mikroskop. Anatomie IX, 2. Obersteiner: Centralblatt.

The paper contains, it is true, only some preliminary communications, but is rich in interesting facts. The first part treats of the membranes of the cord. Concerning the connections between the dura and the arachnoidea spinalis, the authors found numerous joints at the posterior half of the cervical portion, which, very short, permit only a limited separation of the two membranes. The subarachnoid space, between the arachnoidea and the pia, is divided by the two ligamenta denticulata into an anterior and a posterior part. Whilst the first appears as undivided, only crossed by a few joints, the pia and the arachnoidea of the posterior half are connected by numerous connective tissue bundles, especially in the middle line. From these, running vertically a real membrane, the septum posticum is formed.

The joints consist of finer or thicker bundles of connective fibres, all enveloped in a delicate sheath, which consists of endothelium cells with nuclei. The arachnoidea is built up of a network of the same kind of sheathed joints.

The pia spinalis is formed by two membranes: the external by longitudinal bundles of fibres of the same structure, and stands in connection with the joints of the arachnoidea. The inner membrane, the intima pia, again, consists of three delicate layers: an external, formed by an elastic longitudinal network; a middle layer of stiff, generally square running fibres, and the inner part, again, exhibits the structure of a delicate elastic network. The inner membrane is closely attached to the surface of the spinal marrow itself, and combined with it by a thin layer of neuroglia, but so closely, that no epispinal space (His) is detectable.

The intima pia escorts all the vessels, penetrating the cord, by forming funnel-shaped sheaths. To the formation of the septa, however, the external layer of the pia also contributes.

When a liquid is injected into the subarachnoid space, this is entirely filled; then it penetrates the meshes of the external layer of the pia, and enters into the funnel-shaped sheath, spreading out between the vessels of the cord and the sheath, but it never enters into the space between the intima pia and the tissue of the cord.

The nerve roots, passing out from the marrow, are provided with a twofold sheath, by the dura and the arachnoidea. In the spinal, as well as in the sympathetic ganglia we can inject an extended net of lymph ducts, which surround the nerve fibres and the capsules of the ganglion cells. They do not empty into the external lymph ducts of the neighboring organs, but they are in close connection with the subarachnoid spaces.

In the peripheral nerves the authors distinguish a threefold covering of connective tissue. Each nerve fascicle has its envelope, the perineurium, of which delicate sheaths penetrate the inner part of the fascicle, the endoneurium, and the fascicles themselves are then held together and united to the nerve by the epineurium.

The whole perineurium consists of delicate membranes, similar to the lamella of the arachnoidea. The injection fluid spreads out between these lamellæ, and penetrates the endoneurium, and surrounds, at last, the single fibres of the nerve. The authors also discuss the nature of the peripheral nerves and the Paccinian bodies. Numerous drawings illustrate the text.

PHYSIOLOGY.

VI. On Physiological Combustion in Living Organism. By Prof. E. Pflueger of Bonn.

Pflüger Archiv für Physiologie X. 6 und 7.

VII. Theory of Sleep. By Prof. E. Pflueger of Bonn.

Archiv für Physiologie X. 9.

In a former paper, "On the Diffusion of Oxygen etc." (Archiv für Physiologie VI. page 43,) Pflüger declares as one of the principle laws of life, that *the living cell* regulates the amount of oxygen consumed during the process of life, and not the *quantity* of oxygen contained in the *blood*, or the velocity of the blood current, or other conditions, which influence the same. And, secondly, that the physiological combustion by the life of the cell, does not imply the presence of *active* oxygen or *ozone*, and that it

is entirely independent of the partiar-pressure of the neutral oxygen. In his present paper the Professor adds to his theory a series of new arguments of special and general interest.

In the first three chapters, after a short introduction, the author criticises the evidences which have been adduced in favor of the presence of ozone in the living organism, and concludes that, hitherto, no reaction has proved, in reality, the free existence of ozone in the blood of living beings. The ozone, in contact with blood, is immediately consumed, or converted into neutral oxygen, and, under no circumstances, is active oxygen conducted into the tissues of the body.

The fourth chapter, treats of some facts of comparative physiology, which are of importance in regard to the relations of the organic cell to oxygen. The absorption of oxygen and the oxidation of carbon is the fundamental principle of all organic life. The plants live and respire, as the animals do. In lower animals, consisting of indifferentiated protoplasm, or of single cells or groups of cells of the same character, it is the whole substance of the body, which respires. As of the greatest importance, regarding the relations of the cell to the processes of oxidation, the author refers to the tracheata or the insecta. Here the apparatus for circulation is found of the simplest kind; no system of capillaries, no veins exist, only a contractile heart, directly opening into an artery. The colorless blood moves through the body and around the organs, but air is not brought into contact with this fluid. The air diffuses directly into the organs by the way of finer and finer ramifying ducts. In the phosphorescent organs of some species, these air ducts have been followed up and found closely attached to the cells. The same, as in the insects, it teaches us the fœtal respiration. From the first moment in embryonic life, when no blood, no vessel exists, oxygen is absorbed, and carbonic acid excreted. In the higher organized animals, the vertebrata, together with the progressing differentiation, the respiratory apparatus is localized. Here, in order to conduct the necessary quantity of oxygen to the different organs of the body, a substance was indispensable, provided with the absorbing property of the hæmoglobine. The hæmoglobine of the vertebrata resembles a commodious freight wagon of great capacity.

The fifth chapter treats of the interesting phenomenon of the *phosphorescence* of organism in its significance to the principles of respiration. It is unquestionable that the phenomenon is due to a process of oxidation. The light is extinguished in hydrogen, ni-

trogen, carbonic acid gas, and in a vacuum; it reappears in atmospheric air. But of what kind is this phosphorescent matter? Pflüger concludes that it is the protoplasm of cells, and that it exists, as is evidenced by numerous facts, by innervation under the control of a nervous center and, that it has certain relations to the processes of respiration. Numerous are the arguments adduced by the author, which space does not permit us to record in particular.

Chapter VI: Facts and hypotheses to the principles in question. At first the author distinguishes between the living protoplasm and albuminous substances in general. It is only the cell which bears in itself the peculiar markings of life, only the cell is living in the true sense of the word. The albuminates of the blood are dead matter inside of the living body, until they are converted into the substance of the cells. In order to conceive the cause by which, after the entering of an organic molecule into the organization of a cell, its affinity to oxygen awakens, we have to touch upon some questions, which lead us near to the last secrets. The first question is that of the chemical principle in action. The albuminous molecules of all the cells and liquids are isomeric; they are modifications of one radical, and the differences must be, perhaps, due to metamerism, or to a physical modification of the simple molecule and to polymerism, the elements of which count either to homogeneous or to metamerie groups. Finally there may occur the most different combinations between the polymeric molecules. There is no element in nature which tends, in a higher degree, to form chain or series-like combinations of homogeneous atoms than carbon. The growth of an organic molecule seems especially favored by this peculiarity. Besides this, in many of the polymeric combinations of molecules, the oxygen acts as the universal combiner. It is, therefore, not difficult to suppose that in the living organism a polymerisation *in infinitum* is going on so that large masses are built up, which, in fact, consist of only one single organic molecule.* Perhaps the whole nervous system with all its active parts, consists only of *one giant molecule!* This would explain the facility by which the oscillations from one part of the nervous system are conducted to other parts and the intimate interaction of so many living cells between each other. It is moreover not at all incomprehensible that the manner of arrange-

* See the reviewer's paper on the germ theory of disease, in this journal, April, 1874, page 20 and fol.

ment of the single radicals in these giant molecules, that is, the points of active chemical affinity during assimilation, as well as the place where the oxygen enters, will be of the greatest importance, so that we may conceive the different manners of growth and decay, as the result of the different primitive arrangements. This throws light in some degree upon the cause, why the albuminous substances exhibit different active properties or faculties, according as they have been assimilated by the one cell or by another. In the living organism, it is a law that the groups of the newly assimilated molecules are identical with those which assimilate. This is the starting point for the conception of inheritance in organic nature.

We advance one step farther, when we compare the already assimilated albumen with the albumen for nourishment. The common albumen of eggs remains unaltered and undecomposed for any length of time, provided, that we exclude from it all germs, which produce fermentation or putrefaction. Protoplasm, that is, organized albumen, the substance of the cell, decomposes always spontaneously. In the building up of a tissue, therefore, *labor* is performed, by which the cohesion of the albuminous molecules has become extraordinarily loosened. This is a fact. A celebrated physiologist, once in his writings, declared spontaneous decomposition as something unthinkable. It is only unthinkable when we imagine a chemical molecule as being in a condition of static equilibrium, or as a mosaic. The mechanical theory of heat has shown, that a chemical molecule must represent a system of bodies in motion, which are under the influence of their own interacting forces, and whose living forces, (vis viva) at least in the gaseous state of aggregation, are proportional to the absolute temperature. Clausius, in his researches into the mechanical theory of heat, shows mathematically that the living forces of the progressive motion do not represent the whole quantity of heat present, and that the differences appear the larger, the greater the numbers of atoms of which the molecule consists. He concludes, therefore, that, besides the progressive motion of the molecules, other motions of their constituents must exist, the living forces of which also represent a partial quantity of the heat. The existence of this intra-molecular motion, of course, has its full validity also, concerning the liquid and the solid state of aggregation, and if nothing else, the specific heat of the bodies, evidences the existence of free motions of the atoms, even in the solids.

Now there is one peculiarity common to all spontaneous dissociations, that the motions of the atoms are supposed to be large

enough to throw them out, more or less, of their spheres of activity. But as these motions participate in heat, so we must conclude, that "*the intra-molecular heat manifests itself as the real and only cause of all spontaneous dissociations.*"

The capability for decomposition characteristic of all living matter is a truth well known to all biologists. This capability is the cause of its *irritability*. How exceedingly minute are the living forces of a ray of light, and how powerful the effects produced on the retina of the eye and in the brain itself! Only the slightest irritation of a muscle, by touching it with the point of a needle, is sufficient to yield an instantaneous contraction, accompanied by the formation of carbonic and lactic acid. How minute are the living forces of the nerves, by which the chemical interaction in the organs of living beings increases in a most powerful manner; and how small the quantity of certain poisons, by which the life of a large animal may be destroyed!

The author then describes some experiments in order to demonstrate the extraordinary tendency of some tissues toward decomposition. Of all the tissues, the *grey substance of the brain* is the most decomposable.

After this Pflüger thought it necessary to examine the relation of oxygen to these dissociations. As the principles of life are the same in all animals, he selected some frogs for his experiments.

Two ranæ temporariæ of 84, 5 grm. of weight, after the lungs were deprived of air, were placed in a large globe containing *pure* nitrogen. The globe, of 1279 cc capacity, was standing in a vessel containing mercury, and therein the frogs remained for seventeen hours. Under the normal conditions of life these animals would have consumed 3, 5 cc of oxygen per hora, by excreting 2, 45 cc of carbonic acid.

After five hours Pflüger examined a sample of the nitrogen; it contained 0, 7 CO_2, corresponding to 10, 3 in the whole of the globe, and representing about the quantity produced by normal respiration. After seventeen hours, another sample was taken; it contained only 1 per cent. CO_2. During the last twelve hours, therefore, only 3, 24 cc CO_2 had been excreted.

"How now"—we let the author speak—"did these frogs act? I had placed ice around the globe and upon the mercury, to prevent as long as possible any spontaneous decomposition. At 2, 44 o'clock the animals were placed in the nitrogen. Immediately I saw that they felt uneasy and anxious. At 3 o'clock a decided dyspnœa was noticed; they were sitting with their mouths

widely opened, and from time to time they raised their bodies as if they were looking for some opening through which to escape. No convulsions or any other state of irritation, as in warm-blooded animals, were observed. At first the respiration was quickened, after that it ceased; commenced again, and then ceased entirely. They sat there absolutely motionless, but the head was raised, and the eyes widely opened. I expected death. But one hour passed away after the other; sometimes, after a longer rest, they again opened their mouths, raised the body, so that there was no doubt, that all the ordinary functions of life were going on. In the evening, at 8 o'clock, they seemed much exhausted, especially one of them, but a wire introduced through the mercury at 9 o'clock, in order to irritate them, showed their entire integrity. They were now packed in ice, and left so over night. The next morning at 9 o'clock, both frogs were lying like dead bodies in their confinement. After taking another sample of the contents of the globe for examination, the animals were drawn out. The most violent irritation of the skin was not followed by any reaction, even the most powerful electric discharge only produced a muscular contraction, where it was applied. There was no doubt, the animals were entirely paralyzed; the excitability of the nervous centers was extinguished; no traces of respiration were detectable.

As now, however, these frogs, since the moment of their apparent death, had remained in a temperature of nearly 0 °C, it was supposed that no putrefaction could have taken place. I hoped, therefore, to restore them to life. In order to prevent any decomposition, they were placed upon large flakes of ice; the lungs were blown up with air, but everything seemed to be in vain. Since then, after staying in atmospheric air for two hours, and, after repeated artificial respiration, no signs of life were detectible, I cautiously opened the thorax of one of the frogs, and saw the heart beating with great energy, and the arteries filled with beautiful light red colored blood. Nevertheless, everything remained in quiescence. Not till about 3 o'clock, that is, 5 hours after staying in atmospheric air, and after arterial blood had been circulating through all the organs, one of the frogs, quite suddenly, moved one of his legs. By and by, in both animals, some reflex motion was noticed. The next morning both responded with energy to all kinds of irritation. The spontaneous respiration was restored But after all they did not raise their bodies when I placed them on their back, that is, they acted as decapitated animals. The function of the spinal cord was entirely that of the medulla ob-

longata partly restored; the brain itself remained paralyzed. One of the frogs died soon after, the other lived for some time.

This simplest of all experiments seems to be, however, of a fundamental importance. It teaches first, that all the principal functions of life occur in a normal way without the presence of any oxygen in the organs of the body, and that, nevertheless, the excretion of carbonic acid is undisturbed for a long time. We have further seen, that the asphyxia was accompanied by a cessation of the excretion of carbonic acid, when we prevented an abnormal decomposition. The clock work only stopped. We furthermore observed that the processes of life had ceased for many hours, in an entire absence of oxygen, without abolishing the possibility of restoring life. With just as much interest we followed the winding up of the clock. A long time after the nervous centers had been fully supplied with oxygen, the irritability of its molecules commenced. Many hours passed away before the sensitive substance again reacted; and the most complicated part of it never regained its normal functions."

I believe everybody will acknowledge the importance of this fact, that all the processes of life may be carried on, for some time, without the presence of any oxygen. But perhaps the amphibia are capable of stopping their life mechanism when necessity commands? Against this supposition I call attention to the fact that the formation of carbonic acid did not cease in the atmosphere of pure nitrogen, and that the movements and the irritability of the animals evidenced the continuation of all the principal functions of life. But these animals are also not capable of arresting temporarily the affinity of their organs for oxygen. Professor Pflüger demonstrates this fact by another experiment: A frog, cooled in ice, to 3° C, was placed for about half an hour in olive oil, which was entirely deprived of air. After this the heart contained black blood, in which no traces of oxygen were detected; nevertheless the spontaneous movements of the animal evidenced an entire integrity of the nervous system.

But the experiment furthermore shows, that the irritability depends entirely upon the amount of intra-molecular oxygen, and that the carbonic acid is produced by dissociation.

It can not be doubted, that these processes of dissociation of living matter, by which life is supported, stand in close relation to the temperature. An increase of only 7° C, in warm blooded animals, is sufficient to cause death. The normal temperture of these would destroy the life of an amphibium. This minute

increase of the living forces of the oscillating molecules, is capable of producing an entire blasting and decomposition of the living substance. Looking into the kingdom of all organism, we see everywhere how the intensity of life increases in proportion to the temperature. When we observe the lizard lively and brisk in summer, and how it is quieted, falling into the deepest torpor by a simple withdrawing of heat, and is re-awakened by raising the temperature, it seems self-evident, that the heat, conducted to its organs, has produced these changes.

The intra-molecular heat is the life of the cell.

The author then discusses some points concerning the transition or conversion of dead matter into living protoplasm. The products of oxidation of all those compounds, which contain no nitrogen are of the same kind, whether they are performed by the processes of life, or artificially in the laboratory of the chemist. This shows, concerning the *hydro-carbonic* radicals that the living albumen does not differ essentially from the albumen for nourishment. Concerning the products of decomposition of the *nitrogenized* compounds, however, there is not the slightest resemblance to those which the living organism creates. The germs of a true solution of this difficult problem, the author discovers in a small paper by J. v. Liebig, who declares that the formation of carbonic acid in the organic change of matter, is a process not belonging to common oxidation. It is, as well as uric acid and urea, a product of dissociation; and for the same reason he denies that the thermal equivalent of common albumen affords a measure for the energy stored up in organized protoplasm.

In order to get some idea of the true nature of these conversions of common albumen into living matter, Pflüger refers to one of the most interesting compounds; the radical *cyanogen*, and to its relations to the albuminous substances. Cyanogen appears as a radical, immensely provided with intra-molecular energy, and the author thinks it more than probable that radicals of that kind are constituents of the living albumen. Especially remarkable appears the resemblance of cyanic acid to living albumen. Both manifest the same tendency to form condensed molecules by polymerisation. The molecule grows to cyamelide; in contact with water it decomposes, like living matter, into carbonic acid and ammonia. Cyanuret of ammonia produces urea, like living matter, not by oxidation, but by intra-molecular dissociation. Like living albumen, the cyanic acid is transparent at a low temperature, and becomes when heated, like living albumen, opaque and solid. There are still more resemblances.

All this betokens, by what way living matter might have originated. The beginnings exist in cyanogen, and the circumstances under which this radical is produced throw a clear light upon these processes. Nevertheless the author denies the existence of a spontaneous generation at the present time. Comparative biology teaches us an origination from but *one* and the *same source!*

In conclusion Pflüger defines his hypothesis in the following words: *The process of life is the intra-molecular heat of most decomposable and by dissociation (mostly under the formation of carbonic acid, water and amide like compounds,) disuniting albuminous molecules, which constantly regenerate and which grow by polymerisation.*

"Should I now explain my thoughts," the author continues, "explain by an, of course only, most imperfect image, I would imagine an immense number of small harps, differently tuned. I would suppose that all these instruments were screwed together into one large body, but in such a manner, that no chord should be impeded in its free oscillation. Then I would fancy, that by the use of a hammer, continual beats were being played against this system, so that all the chords would swing and all the harps would ring. The harps represent the living albuminous molecules; the oscillations, the life, that is, the intra-molecular heat; the beats of the hammer, the heat which sustains the oscillations, or which compensates the loss of the living forces. In an organic body there exists such a hammer, one, or even more for each chord, for each molecule. The energy of the stroke by which the oscillations are produced and sustained, depends upon the formation of carbonic acid. The formation of carbonic acid produces minute explosions, by the effect of which the oscillations of the molecules increase. The specific process of life is, therefore, extinguished,—as our experiments with the frogs have shown—at the moment when the formation of carbonic acid ceases. The latter appears as the force, which plays upon the instrument. We, therefore, find the formation of the same carbonic acid in each cell, although these differ in faculty and function, because the *functions* resemble *the music*, which depends upon the tuning of the instrument.

But our image is only most imperfect; it demonstrates merely one part of the relations in question. It gives no idea of my opinion, that the different molecules are bound together, by the way of chemical affinity, into a system of intimately connected nets, by which connections, the oscillations are easily conducted from one

place to another. The image ignores further the mass motions, as they occur in consequence of contraction and secretion. In this, I suppose, that the atoms of one fibre of such a net, which still cohere by the inner forces of the molecule, exhibit in a state of dissociation, an attraction to other disuniting molecules, which belong to the fibre of a neighboring net. As soon as the chemical combination of the atoms, belonging to *both* fibres, has been effected, by forming one united molecule, the attraction, of course, which was produced by these atoms ceases. The fine meshes of the net I imagine as being filled out with watery solutions."

The last chapter of this interesting article is dedicated to a determination of the limits of the partiar-pressure, in which the physiological combustion occurs. The author here refers to some facts communicated by Bert in the "Comptes Rendus." (Recherches experimentales sur l'influence que les changements dans la pressions barométrique exercent sur les phenomènes de la vie 1873, 77, p. 531 and 76, p. 443, etc.,) which, concerning the physiology of respiration, belong to the most important discoveries of the last decennium.

If animals respire in an atmosphere of oxygen of high pressure, they will be affected with convulsions at the moment, when the arterial blood contains 28=30 Vol. p. c. (0, 76 m. pressure) of oxygen, and they die in 35 Vol. per cent. As this is equal to an amount of 22, 8, p. c, and 26, 6, p. c, by a pressure of 1 meter, it is evident, that it represents only a small increase of the normal amount. This small increase, however, corresponds to an immense increase of the *tension* of the oxygen, about as 35 to 2280.

Bert shows that the life of animals is the more rapidly destroyed the more energetically they respire. Insects die sooner than arachnida, and these sooner than the mollusca. Even fishes die in water which contains more than 10 Vol. p. c of oxygen. The same, Bert observed in plants, which proves the similarity of these processes in both kingdoms.

But the most important of his discoveries is that the consumption of oxygen, and the formation of carbonic acid *decrease* in an inverse ratio to the pressure. The excretion of urea diminishes, and the temperature is lowered, while the animal suffers from convulsions. If anything, this fact, supports the theory of Pflüger, that it is the living cell itself which regulates the amount of oxygen consumed. The living cell *takes* the oxygen, as one of its active functions of life, and thus it exhibits about the same con-

duct as active phosphorus, which displays no affinity to *comprimated* oxygen, and which is not oxidized, as Pflüger shows by experiment, in an atmosphere of the same.

THEORY OF SLEEP.

In the theory of life, exposed in the foregoing article, Dr. Pflüger alleges, that the action of all organs depends upon a dissociation of living matter, which represents a peculiar modification of albumen. He showed by experiment, that the excitability is based, mainly, upon the intra-molecular oxygen, and that it is extinguished, at the moment when all the oxygen is consumed by the formation of carbonic acid. This alludes especially to the central nervous system, although it has its invariable validity in every organ of the body. As the carbonic acid is continually formed by dissociation, which produces metamerism, that is the interchanging of the atoms, the chemical potential energy, consumed by this process, is next converted into heat, i. e.; molecular motion of the newly formed carbonic acid molecule. These violent oscillations or intra-molecular explosions, which continually occur during life, produce by transmitting the impulse to all parts of the molecule, an intense vibration of all the atoms. The author compares this to the "singing flames." In such a state of action he imagines all living matter, but especially, the grey substance of the nervous centers. In wakening, these vibrations are the most intense; the singing of the flame is the loudest.

By the experiments with the frogs we have been taught, that at the moment when the intra-molecular oxygen is consumed, life is extinguished, that is, the animal falls into a state of asphyxia. The clock stops! but death does not occur, as *death* would be the *destruction* of the clock. In our frogs, life was restored, and the asphyxia was preceded by a state of dullness and drowsiness. Pflüger now parallels this asphyxia, produced by the lack of intra-molecular oxygen, with sleep; it is the *most absolute sleep.*

In warm blooded animals and men, the life of no organ seems more dependent upon the supply of oxygen, than the brain itself, and all facts known, manifest the existence of very labile states in the grey substance of the centers, which continually tend to dissociations. Even in our experiments with the frogs, we only succeeded in restituting the functions of the medulla and the spinal cord.

As now the whole nervous system, including the muscles, and very probably the secreting glands, represents one single *continu-*

ous body, the so called *animal net*, Pflüger imagines this body as consisting of an immense number of molecules which, by chemical energy, are connected chain-like to each other, so that they form single or anastomosing fibres. Between the meshes of the net of fibres he adopts the presence of saline solutions, products of decompositon, and even unorganized albumen for nourishment. In regard to the true existence of such a net of molecules, the author refers to the peculiar fibrillous structure of the ganglion cells, of the axis cylinder, of the muscular fibres and the gland cells; although he believes that these visible fibrillæ, are in reality, fascicles of still more minute fibres. This body, the organized net, plus the solutions, represents the soft-solid condition of the substance of the living cell, viz: the protoplasm.

As now in these elementary fibrillæ the atoms must constantly be in a state of oscillation, it is evident, that each alteration will be transmitted from one atom to the neighboring one, and so on.

Consequently; since in the grey substance of the brain the most powerful vibrations during wakening, are produced by the formation of carbonic acid, these vibrations, like waves, are transmitted to all parts of the body. Each oscillation of the dissociating molecules of the body must increase the dissociation itself, that is, the consumption of force. During wakening, therefore, an increase of the consumption of the chemical potential energy ensues in all parts of the nervous system.

But the consumption of latent chemical energy in the grey substance of the brain, during wakening, is so important that, at the same time the absorption of oxygen can not keep pace with it, and so the grey substance loses more during wakening than it gains. The formation of carbonic acid, therefore, must constantly decrease, the explosions are diminished in number, and the brain gradually approximates to the state of drowsiness preceding the asphyxia, above described. In the same proportion, however, as during sleep the living molecules of the brain are again saturated with intra-molecular oxygen, the formation of carbonic acid increases. And, again, a stage will be reached, in which in the molecules the oscillations of the atoms increase, without the sum of their living forces seeming sufficient to produce that energy of dissociation, which the wakening state requires. So the intensity of the living forces of the intra-molecular oscillations must again increase by an increased formation of carbonic acid, until, either by a summation of these inner energies, or by external excitation, by a sound etc., a powerful wave, vibrating through the

brain, redeems a great number of dissociations, a copious formation of carbonic acid, followed further and further by numberless dissociations.

Wakening and sleep, therefore, depend, primarily for a given instant, not upon the sum of the potential energy contained in the brain, but upon the sum of living forces of the intra-molecular motions.

VIII. On the Influence of the Velocity of the Blood Current and the Quantity of Blood to Animal Combustion. By Dr. D. Finkler of Bonn.

Pflüger's Archiv X. 7.

The author communicates the results of a series of experiments, by which he demonstrates that the *consumption* of *oxygen* is *absolutely independent*, of course in certain limits, of the velocity of the blood current, a law which is, very probably, equally binding in regard to the excretion of carbonic acid. In these experiments the retardation of the blood current was effected by bleeding, and it is undoubtedly of great interest, that a diminution up to one third of the normal quantity of blood, produces no alteration in the consumption of oxygen. This fact adds a new and heavy argument to the theory of Pflüger, (See No. 6) that the consumption of oxygen takes place in the tissues only, and that it is regulated by the cell itself.

IX. Investigations Concerning the Brain. By Edward Hitzig, of Berlin.

1874: Hirschwald, Berlin.

X. Investigations Concerning the Brain. New Series. By E. Hitzig.

Reichert and Dubois-Raymond's Archiv. 1874, IV.

In 1870, that is, about three years before Ferrier, Hitzig and Fritsch in a paper, published in Reichert's Archiv, overthrew the dogma of the inexcitability of the cortical substance of the cerebrum, which, since the time of Flourens, was a governing fact in physiology. In the present volume, etc., Dr. Hitzig recapitulates his researches in a more complete form, and adds a new series of interesting results from recent experiments.

By the application of very weak galvanic currents to the cerebrum, Hitzig and Fritsch, find it possible to localize certain com-

bined muscular contractions to certain spots of the grey cortex; and all those circumscribed spots, in which the weakest current produces a contraction, the authors call "for brevity's sake," a *center* of the muscles of the fore or the hind leg, etc. A slight displacement of the electrodes, generally excites the same extremity, but other groups of muscles, so that, for instance, instead of a flexion an extension occurs, etc. By the extirpation of the parts of the cerebrum, belonging to those centers, a disturbance of the voluntary movements in the same muscular regions is effected.

Fritsch and Hitzig, by this manner, discovered in dogs, *five* such centers, to which the latter now adds *six more*. All these eleven centers belong to the parietal lobe of the cerebrum. Numbers one to four are situated around the sulcus cruciatus, (Leuret,) which stands vertically to the scissura pallii, at the border between the anterior and the parietal lobe. Four, the center for the muscles of the hind legs is located near to the scissura pallii, a little behind the sulcus cruciatus. Three, the center for the flexors and the rotators of the fore leg, a little more laterally and more to the front than four. Two, the center for the extensors and abductors of the fore leg, still more laterally and more to the front than three; and one, the center for the muscles of the neck and the trunk, considerably more to the anterior and median part. Six, the center for the tail, and seven for both extremities, on one side, are exactly between three and four, so that six borders on four, and seven on three. Five, the center for the movements and the protection of the eye, lies near the border of the parietal and the occipital lobe, about in the middle between the scissura pallii and the anterior upper edge of the fossa Sylvii. Just before the upper end of the foss Sylv. is located eleven, for the movement of the ear, the posterior part of it extends over the sulcus, so that it belongs really to the temporal lobe. Eight, nine and ten, the centers for eating, belong to the lateral and the lower part of the parietal lobe; eight, for the movements of the tongue, and nine for the opening of the jaws lie more anteriorly, while ten for the closing of the jaws and the retraction of the corners of the mouth and the tongue more posteriorly.

The most remarkable and interesting peculiarity now, of all the muscular contractions, produced by excitation of one of these centers, is that they are co-ordinate actions, such as the animal executes voluntarily. By the excitation, for instance, of the center, not larger than the head of a pin, which regulates the muscles for moving and protecting the eye, those are set into

action which, in reality, are innervated from very different nerves, the functions of which, however, stand in close relation or connection to each other.

Another interesting peculiarity of the muscular movements, produced by the excitation of these centers, is worth mentioning; that they are one-sided in the extremities, but double-sided, concerning the muscles of the neck, the trunk, the tongue and the face. This fact seems the more interesting as it has been observed long ago by pathologists, that paralytic affections, produced by morbid conditions of the cortex cerebri, are often only explicable under the supposition of functional co-operations, although hitherto, no direct anatomical relations could be recognized.

In the new series of experiments, Dr. Hitzig describes the results of an injury or of an entire extirpation of the gyri, a, b, c and d, in consequence of which no motory disturbances of any kind were effected. The four gyri are located in the anterior lobe of the cerebrum, in front of the sulcus cruciatus; d, bordering the sulcus; a, in front of d; b, below a; and c, a little laterally and below the gyrus b. These facts are of the highest importance, as they on the one hand, confirm the results obtained by galvanic excitation of the above centers, and on the other hand furnish a new proof of the hitherto much doubted question of true localizations in the cerebrum. There are groups or centers in the cerebrum, which stand in direct relation to motor organs of the body, and others which do not. This is a fundamental principle. Small, although, the results seem to be, they furnish a basis for a true scientific explanation of phenomena, which, up to the present time, were hidden in darkness. In this relation, Dr. Hitzig also turns his attention to all secondary degenerations, which were occasioned by the injury of the gyri, on which he experimented, of which a more complete account will be given in a subsequent paper.

XI. Experimental Researches Concerning the Functions of the Brain. By Prof. H. Nothnagel of Jena.

Virchow Archiv 57, pag 184; 58, pag 420; 60, pag 120; 62, pag 201.

While Hitzig was exploring the grey cortex of the hemispheres, Nothnagel directed his attention more to some inner regions of the brain. He experimented on rabbits, by destroying certain parts by chromic acid injections, or by the use of a very fine trois-cart with opening springs at the end, which he carefully intro-

duced into the brain, through small openings in the skull, and by the rotation of which, after opening the springs, an entire tearing up of the tissues was effected.

I. *Nucleus lenticularis*, (corpus striatum externum; the second ganglion of origin of the crusta of the cerebral peduncle, Meynert.) An injury or a destruction of this nucleus is always followed by a decided motor paralysis, while the sensibility of the skin remains intact. In whatever point we strike the nucleus, a deviation of the legs will be produced to which an injury of the anterior and middle part adds a curvature of the spine. It is, therefore, evident that the nucleus for the most part contains motory roots. This is in accordance with the anatomical investigations of Meynert, and with the pathological fact, that apoplexy and softening of the nucleus lenticularis are connected with very decided hemiplegia.

II. *Nucleus caudatus*, (corpus striatum internum; the first ganglion of origin of the crusta of the cerebral peduncle, Meynert.) An injury of this nucleus, as Magendie has stated, is characterized by two different orders of phenomena. When the chromic acid strikes a certain point near the edge, bordering the ventricle, the animals begin to jump straight forward or "en manège;" then they rest, jump again, followed by shorter pauses of rest, until after 5 to 8 minutes, they fall, but still vehemently flexing and stretching the legs. After one-quarter to one-half hour they are lying exhausted on the floor; then they seem to recover, but, at the most, after 18 hours they die. Nothnagel calls this remarkable spot the "*nodus cursorius.*"

When the acid destroys a larger part of the nucleus, phenomena of quite a different character occur. This second group is analogous to those which are observed, when the posterior part of the nucleus is injured, that is, they are followed by exquisite motory disturbances, quite in accordance with clinical observations.

III. *The cornu ammonis*, (pes hippocampi.) Neither by irritation with a needle nor after a destruction by chromic acid do disturbances in any direction occur; but most animals die soon of meningitis.

IV. *Thalamus opticus.* a, Slight injuries at the surface were borne without any effect. b, Deeper stitches produced a temporary deviation of the legs on both sides. c, Injuries of the posterior half, at the base, extending to the pedunculi cerebri, produced a turning around of the head to the other side, deviation of the legs, manège movements, but no disturbances of sensation. d. A horizontal division of the thalamus is followed, at the momen

of the dissection, by a motion of but short duration, of the animals to the side which was injured, afterward they turned around to the uninjured side. The hind legs did not participate in these movements.

V. *Extirpation of both nuclei lenticulares.* All spontaneous and voluntary movements were anihilated. The animal sat motionless; the head, the limbs, the whole body remained in any position given them; a slight irritation of the skin produced a slight contraction of the parts touched; more violent excitations were followed by a single jump forward, but the animal was not capable of avoiding any obstacles. The hemispheres were intact, but they acted as animals in which these were removed. There can not be any doubt, but that the tracts of all the different nerves, by which voluntary motor impulses are effected, were interrupted. But the peculiar reflex movements as above stated, show, that below the nuclei of origin of the crusta of the cerebral peduncle, a mechanism exists, by which in answer to an external sensorial excitation some regulated movements may be accomplished. Meynert in his anatomical researches concludes, that this mechanism, most probably, is located in the ganglia of the tegmentum of the crus cerebri, in the optic thalamus and in the corpora quadrigemina. Nothnagel believes, therefore, that the nucleus lenticularis combines in itself all the nerve tracts which conduct the voluntary motor impulses (psychomotory impulses! Meynert,) from the cortex of the hemispheres into the lower tracts.

VI. *Extirpation of both nuclei lenticulares and excitation of the nodus cursorius.* By this experiment the author shows, that the extirpation of the nuclei does not affect the excitability of the nodus, but produces this remarkable conduct. The animals, striking against an obstacle, come to a permanent rest, retaining exactly the same position of the extremities, as at the moment the stroke occurred; by pinching the tail they again begin to run, etc.

VII. *Destruction of both nuclei caudati.* As long as the point of the needle is stirring around in the ganglia the animals sit motionless. From one-quarter to two minutes afterward they jump down on the floor, and violently run through the room; reaching a corner they try to ascend the wall, avoiding all obstacles in their way. Striking an obstacle, however, they rest until they are forced to renewed movements, especially by sensations of the eye or the ear. This last phenomenon is very characteristic.

The experiment shows that after an entire destruction of both corpora striata, the voluntary movements are not impaired so long

as the nucleus lenticularis remains intact. It is evident, hereby that the theory, that the latter contains centers of the psychomotory tracts, is highly supported. Nevertheless we must suppose that the corpora striata, also stand in some relation to motory actions. Meynert in a recent paper, (Archiv für Psychiatrie, IV. 2,) points out, that, physiologically, the excitations of the corpora originate in the cortex of the cerebrum, and that these bodies do not give rise to reflex actions. It has been shown, in the foregoing that the psychomotory impulses by the way of the nucleus lenticularis pass over into the crusta of the cerebral peduncle, that is, the base of the crus cerebri with its ganglia. If now, on the other hand, the corpora striata are anatomically connected with the latter, and as it further seems more than probable that the corpora are excited by impulse from the cortex cerebri, while finally they give origin to motor actions by a direct excitation, the question arises, how is all this to be understood? Nothnagel concludes that the *nucleus caudatus* stands in relation to all those combined motor actions, which originate by a psychical act, and which continue, as if automatically, without any further voluntary motor impulses. By the nucleus lenticularis, each single muscle is innervated, and the most complicated muscular actions may be performed; by the corpora striata, only combined movements of *certain* muscles will be set in activity, which seem to proceed originally and in the beginning from the cortex cerebri. Each movement produced by the nuclei lenticulares is extinguished with the exciting voluntary motor impulse; those by the corpora striata surpass in duration the original excitation.

VIII. *Destruction of the thalami optici.* Meynert, in his anatomical expositions, concludes, that the tracts of the tegmentum of the crus cerebri and its nuclei of origin, viz.: the thalami optici and the corpora quadrigemina, do not conduct any voluntary motor impulses. The thalami are anatomically in connection by *centripetal* tracts with sensorial peripheric expansions; by *centrifugal* tracts with muscles, and, again, by *centripetal* tracts with the cortex cerebri. The thalami, therefore, transmit those combined movements, which, unconscious or reflex, originate through an excitation of the sensorial peripheric layers. These, at the same time, by the other centripetal tracts, are conducted to the cortex, and fixed in its ganglia. These fixed images or conceptions of movements, then, render it possible to generate voluntary and conscious movements.

The experiments of Nothnagel support this most ingenious hypothesis of Meynert. The destruction of the thalami optici

produces no motor paralysis whatever, and no anæsthesia of the skin. The tracts, therefore, for the innervation of voluntary movements do not pass the thalami, and we must conclude that they are only excited by peripheric sensorial impressions.

XII. Researches into the Motory Functions of the Cerebrum. By Prof. M. Schiff of Florence.

Lezioni sopra il systema nervoso encephalico, Fierenzi, 1874, p. 529, ff.

As having a close connection with the researches of Hitzig, the communications recently made by Schiff, may be of equal interest to our readers, and we quote from these, the following:

I. "Everything, which destroys, or suspends momentarily, or diminishes the sensibility, annihilates the movements produced by the excitation of the cerebral cortex, and neutralizes the excitability of the anterior lobes of the cerebrum!" Schiff demonstrates the truthfulness of this statement, by putting the animals, (dogs,) on which he experimented, before opening the skull and during the application of the galvanic current to the centers, under the influence of chloroform, ether or other narcotics. No effect whatever was observed, not even at the moment, when the first automatic movements again commenced, and when the limbs, the eye, etc., again responded to local irritation. As the excitation of all true *motory* centers and tracts are not impaired by anæsthetics, and as the author thinks it not justified, to presume an exceptional case in regard to the brain, he concludes, that the excitation of the so-called motory centers of the cortex cerebri display merely movements of a reflex nature.

II. But without employing a narcotic, it is possible, in a normal animal, to suspend all reflex actions, at least for a time, while the excitability of the motor nerves remains intact. This is performed by occasioning a very rapid artificial respiration. When, in consequence of the more rapid movements, the pressure of the air reaches a certain degree, the respiration ceases, and the animal falls into a state of asphyxia, in which it remains for some time. Then the excitability of the brain is entirely annihilated, but, after automatic respiration has recommenced, it regains its normal condition.*

III. Hitzig and Fritsch pointed out, that the excitation of the "motory centers," by induction currents, does not produce a true

*In regard to this fact we call the attention of our readers to the foregoing two articles of Prof. Pflüger.

tetanic contraction, as was expected. It seems, that a tetanic contraction will be unavoidable, if an interrupted, induced current passes a motory center; but it is something very different if we have to deal with a sensory center, which is excited by an unforseen sensation of contact. The induction current produces an uninterrupted sensation of contact, but such a contact is no longer an excitation. It excites only at first, and, if continued, is not exciting, o in a less degree, than in the beginning. The effect of the induction currents, therefore, favors the views of Dr. Schiff.

IV. Of still greater importance is the effect of one single shock of an induction current. At first we notice that a single induction shock, which has a powerful effect upon a motory nerve, affects in a much less degree the disseminated motory centers, than the simple closing of a battery. Just the contrary we observe in the motory nerve. But, before we explain the cause of this difference, we will note another interesting peculiarity.

It is well known that, if with a common induction apparatus, and with a battery of relatively small resistance, one after the other, an induction shock, produced by opening and closing a weak current, *can be* discharged upon a motory organ, *without* any effect. If the intensity of the induction current is increased until it acts, then the opening current induces a contraction, while the closing shock is still without any effect. By applying now a simple induction shock to the so-called motory centers of the cerebrum, an opposite phenomenon occurs; the closing shock is the first which acts. How is this to be explained?

The preponderance of the opening shock is apparently due to the fact, that here the same quantity of electricity passes through the animal conductor in a much shorter time, than at the moment of the closing of the current. The duration of an opening shock is an extraordinarily short one. We can assume that after the one-thousandth part of a second, no physiological effect in an animal conductor is induced. This momentary action is, however, sufficient to cause a powerful effect in a motory apparatus and to produce pain in nerves, which respond to such excitations. But where we are only capable of exciting the sensation of contact, it requires a much longer time to induce an effective excitation. A sensation which lasts only the one-thousandth part of a second, escapes our notice, and induces no reflex action, even when it extends over a large part of the body.

It is, therefore, evident even if the excitation by the opening shock is weaker, during each moment, than during the closing

current, that this will be compensated by the duration of the excitation. This is ascertained by the application of continuous currents. Such a current is more effective than an induction current, and this is due to its longer duration.

Schiff now shows, by an experiment, in which the current could be interrupted to his liking for a longer or a shorter time, by the use of a rotating wheel, that for a certain strength of action of the battery, a one three-thousandth part of a second was sufficient to induce a contraction, by exciting the lumbar enlargement of the spinal cord, while an effect by exciting the centers of the cerebrum did not result until after the one-two hundred and sixty-eighth part of a second; a duration of the current was necessary here about ten times longer than in the motor tracts. These figures, of course, varied in other experiments, but the result was always essentially the same.

V. Already Helmholtz has observed, that the excitation of a motory apparatus induces a movement in a much shorter time, than that of a sensory one, which occasions the movement by reflex action. This is true, even when we reduce the time considerably for conducting the sensation to the center. The conversion of a sensation into a movement in one and the same center, requires a certain time. It is, therefore, evident that, if we measure the time, which elapses between the moment of the excitation of a center, and the beginning of a muscular contraction, we may decide with much probability, if we have to deal with a *motory* or with a *reflex* center.

Also, by employing this method of investigation, Dr. Schiff comes to the conclusion above stated.

VI. The author finds another proof of his view, in the peculiar character of the movements in question, in consequence of an extirpation of those cerebral centers. The description of them, given by Hitzig, seem correct. They evidently display the results of a destruction of the sensation of touch without any true symptoms of motor paralysis. Schiff has, in dogs, extirpated some, in other cases all of these so-called motory centers, and never observed a change in the energy of the movements, but undoubtedly, in regard to the confidence and the firmness with which the animal acted. The animals displayed the symptoms of a true locomotor ataxy, which the author demonstrates in detail by some further experiments.

"We are not aware," the author then concludes his article, "of any fact, which establishes the true existence of motory centers,

for the movement of muscles, in the cortex of the cerebrum, but a series of quite recent experiments, made in the physiological laboratory of Florence, have evinced, that a great part of the cortex commencing a little behind the olfactory lobes, and ending near the posterior quarter of the lobes, induces an acceleration of the movements of the heart, by the application of induction currents, an effect which seems in no way impaired during anæsthesia. These accelerations do not depend upon a change of the pressure of the blood. Their course passes through the roots of the accessory nerve, and through the branches, which follow the nervi laryngei superiores down to the heart. They do not, as far as is at present known, exhibit any peculiarity of reflex actions, and seem to be the effect of a direct excitability."

XIII. On the Excitation and the Arrest of the Actions of the Nervous Centers. By Dr. A. Freusberg, of Strassburg.

Pflüger's Archiv. X. 4, 5.

To the mysterious phenomena of the reflex movements in the animal kingdom, is added the well known fact, that these can be arrested under certain circumstances; for instance by volition, or in consequence of another sensory irritation, etc. In experiments, therefore, in order to obtain a clear feature of reflex phenomena, it was necessary first to remove the cerebrum from the animal. Thus, it was supposed to be possible to distinguish between centers of reflex action and centers of arrest, locating the former in the substance of the spinal marrow, and the latter in the brain itself.

But it was discovered, that the brain also was capable of liberating reflex movements, and the spinal cord was found to contain centers for arrest. The mystery of the fact, however, and the inner coherence of these phenomena remained unexplained. Dr. Freusberg, in his paper, attempts to solve this question by the following considerations, which are based upon authentic observations.

The author proceeds from the fact, that all parts of the central organs are provided with the same capability of being put into action by excitation of the sensory nerves, as well as by the stimulating constituents of the blood. Nevertheless, different centers differ in irritability. Certain, (the automatic) centers are most easily affected by blood stimulants, so that the normal change of matter preserves their activity, whilst they, first of all, react to

each deviation from the normal state. Furthermore, each center is prominently excitable by those sensory nerves which terminate in it, so that a slight irritation of the nerves induces the activity of these centers. Slight excitations, therefore, of certain sensory nerves are only followed by the movement of a certain and confined number of muscles. Yet, if the excitation increases, at a certain point, the effect will extend over other centers also, since, at least, the neighboring centers are nervously connected. Such extensions may be produced by sensory excitations, or by the stimulating condition of the blood. Thus, for instance, a slight touch of the paw of a frog, of which the brain has been removed, will cause a retraction of *one* leg, and the normal condition of the blood keeps up only the contraction of the muscles for respiration, whilst a severe pinch of the *fore* leg, also produces movements of the *hind* leg, and, in dyspnœa, quite a *series* of muscles will be seen in activity. The same phenomena, as by an increase of excitations, are observed when several simultaneous excitations are produced; an accumulation of effects takes place.

I. This occurs when a sensory nerve is placed under the influence of similar or different irritations in rapid succession; the leg for instance of a frog, from which the brain has been removed, dipped, after a slight mechanical irritation, into diluted acid, reacts more violently than without the preceding mechanical irritation.

II. A summation of effects occurs, when a sensory excitation, extending by its intensity over a series of centers of innervation, is followed by a new and separate excitation of one of those centers. Thus, each sensory irritation will be intensified, by first dipping the whole animal into diluted acid.

III A summation occurs, when, at the moment of a sensory irritation, the whole central organ is affected by a stimulating condition of the blood.

In general, therefore, the state of excitation of a center increases its disposition of becoming excited, or in other words, the increase of the excitability and the state of action of a central organ are conditions similar in nature, but varying in degree.

From this point of view, various phenomena should be looked for. By what reason, for instance, are the automatic centers of the medulla oblongata so extraordinarily disposed to become excited by sensory affections, even of nerves, which are located far off? Why does an emotion influence the action of the heart, before any other muscle is moved? It is, because these centers are perma-

nently in a state of high activity, to which each impulse adds its increase of action.

To the same peculiar organization of the nervous system, the author traces back, originally, the possibility of all education; the power of creating indissoluble associations of sensations; the power of organizing conscious actions into more or less unconscious, or reflex operations. Also the effects of some toxical substances will appear in a different light. The peculiar power of strychnine, for instance, of seemingly increasing the reflex actions, is, very probably, due to its most violent action upon *all parts* of the nervous system as a *whole*, to its creating a general state of an increased excitability, because of which the effects of each new excitation, induced by constituents of the blood, or by a sensory irritation, appears so extraordinarily intensified.

Since now, in the foregoing, we have seen by what inner relations a summation of effects occurs, the question arises, under what circumstances an *arrest* is produced, when simultaneous excitations act upon each other. The author here refers to some facts first communicated by Goltz.

A gentle stroking of the back of a frog, from which the cerebrum has been removed, is followed by a loud croaking; this ceases instantly, when, at the same time, one of its hind legs is irritated, which causes a movement forward. But, on the other hand, this latter irritation never produces a croaking, as the stroking of the back does not liberate any movements. In the uninjured animal, both may occur, if the excitation has reached a certain degree.

It is evident, *two different centers* of innervation have been set into action, and *one* was stopped. But there is no reason to presume that the simultaneous excitation of the second one, besides producing a movement, should have created the arrest of the former by acting upon a center of arrest belonging to the same. All that may be concluded from the simple fact is, that the one excitation was responded to by a reflex action, the other not; but, since in this experiment, apparently, two different centers of innervations have been excited, it would naturally follow, that the organization of the nervous centers must be of such a kind "that *different centers can not be set into activity, at the same time, by different causes.*"

This in reality is the standpoint taken by the author, and we must confess, that he defends his position in a most successful manner. He analyzes and examines in this new light not only all,

that has been hitherto observed concerning the nature of the reflex operations, but also refers to the recent labors of Hitzig, Nothnagel and others, and adds a series of his own observations, in order to support his theory.

In general, the author believes, that the law of the so-called arrest of reflex movements, at present, can not more closely be defined than in the following terms: "that all those excitations hinder or prevent a reflex, induced by other excitations, which, exciting other centers of innervation, liberate other actions of the organism."

The central organ, therefore, almost counterbalances the excitations, to which it is exposed, in the process of which the most powerful one neutralizes the other, so that the organ, at last, reacts to the *difference* of the energy of both. "The energy of action, therefore, as well as the excitability of a center results from the sum of excitations which proceed to action, plus those which are already in activity, and minus the quantity or energy of those which, at the same time, are induced in other centers."

Nobody can serve two masters. We may look at the conduct of an animal. A dog sees a dog; by reflex action it associates itself with the other one; the call of its master excites another reflex; either the first or the second will be predominant, and be answered. It is a common fact, well known to everybody, that most persons will stop labor, quite unconsciously, when they are addressed by another person, or in consequence of a sensation by the ear or by sight. A child, which first begins to walk, balancing his little body by all the efforts of his mind, instantly looses his confidence, when his attention is called to another subject. And, even the most developed brain is confined in its display of operation to certain limits, beyond which it can not act.

Thus, the stoppage by excitation displays a most important fact in regard to the reflex operations, not only in the actions of the spinal marrow, but in the operations of the whole central nervous system in all of its parts. Thus the author recognizes the same mechanical organization in the cord, as in the substance of the brain itself, and vice versa.

XIV. The Vaso-motor Center. By Dr. M. Nussbaum of Bonn. Pflüger's Archiv X. 7.

Since Pflüger, in 1855, showed that the vaso-motor nerves pass through the anterior roots of the spinal cord, and that the electric excitation of the cord, after its separation from the medulla and

the brain, produces a contraction of the arteries of the mesentery, the point has been indicated, where to search for the vaso-motor centers.

When the spinal cord of a frog is cut through below the first vertebra, and the medulla oblongata and the brain have been removed, it is easy to observe an arterial contraction by exciting the spinal cord.

If the brain has been cautiously removed, without much bleeding, about five minutes after, the contraction, first produced, will be followed by a dilatation of the vessels, which lasts about two hours; but then the *rhythmical contractions reappear*, as they have been observed in the uninjured animal by Schiff, Saviotti, Riegel, etc. To mistake these *active* movements of the walls of the arteries for the pulse, can not very well occur, as they differ in time, and as the velocity of the blood current is affected in an opposite way by the action of these two agents. The systole forces the blood into the arteries, dilates its elastic walls, and accelerates the current, so that, ceteris paribus, at the depression of the wave, the current is the slowest, and the lumen of the vessel the smallest. But, if by an active contraction, the lumen is lessened, the current will be accelerated by the action of this new power.

The experiment is also successful when the cord has been cut through farther down, that is, below the plexus brachialis, and also in animals, which have been put under the influence of curare. With the extirpation, however, of the whole central nervous system the tonus of the vessels ceases entirely.

It is, therefore, evident that the spinal cord, by itself, like the medulla oblongata may induce a vaso-motory innervation, and that the medulla only contains the upper end of the vaso-motor center.

XV. On the Center of the Vaso-Motor Nerves and of the Motor Nerves of the Uterus. By Dr. W. Schlesinger, of Vienna.

Stricker, Medicinische Jahrbücher, 1874, 1.

Dr. Schlesinger in his investigations to determine the location of the vaso-motory centers, arrives at about the same conclusions as Dr. Nussbaum, (see the foregoing article.)

He experimented on rabbits; many facts from earlier experiments compelled the author, to conjecture, that a close connection might exist between the centers of the motor nerves of vessels, and those of the uterus, a conjecture which is confirmed by his recent researches.

Both centers extend from the medulla oblongata down into the spinal cord. In all cases, where the innervation seemingly was interrupted by a separation of the cord from the medulla, an injection of strychnine into the vena jugularis externa restored the excitability.

XVI. The Parts of the Medulla Oblongata, by the Destruction of which the Respiration is Arrested, and the Center for Respiration. By Dr. Gierke, of Breslau.

Pflüger's Archiv, vii, 12.

XVII. Researches on the Center for Respiration. By Dr. P. Rokitansky, of Vienna.

Stricker, Jahrb., 1874, 1.

Both authors undertook, but without the desired success, to rediscover or to determine the existence of a certain group of ganglion-cells in the medulla, by the destruction of which, according to Legallois and Flourens, respiration should be arrested, and death occur.

The center of Gierke was found to consist of a fascicle of fine nerve-fibres, which originate in the nuclei of the vagus and the hypoglossus. This can not be taken for a center, in the true sense of the word, since it represents only the principle conductor for the mechanism of respiration, which, apparently, must be innervated by different groups of ganglion-cells, with which its fibres are anatomically connected.

Rokitansky employed injections of strychnine, after having divided the medulla at different heights, and communicates, that sections below the fourth ventricle, and at the border of the pons produce only a disturbance of respiration, which, for a time, can be compensated by the effect of strychnine, injected into the blood. The author, therefore, thinks it not admissable to conclude, that no parts of the center are located below the ventricle. On the other hand, the extirpation of the hemispheres of the brain, does not disturb respiration; but it ceases entirely, or the animals die soon of dyspnœa, when the extirpation extends down to the posterior corpora quadrigemina.

XVIII. Physical Experiments on the Sense of Equilibration in Men. By Prof. E. Mach, of Prague.

Wiener Academieberichte, No. 25.

XIX. On the Functions of the Semi-Circular Canals of the Labyrinth. By Dr. Joseph Breuer, of Vienna.

Stricker, Jahrbücher, 1874, 1.

XX. On the Functions of the Semi-Circular Canals. By Dr. Cyon.

Pflüger's Archiv VIII, pag. 206 ff.

XXI. On the Relation of the Semi-Circular Canals of the Labyrinth to the Equilibrium of the Body. 1 Experimental Part. By Dr. H. Curschman, of Berlin.

Archiv für Psychiatrie, v. 2.

The fact, first discovered by Flourens, (Recherches experimentales, etc., I. edit. Paris, 1842, p. 442 ff,) that an injury of the semi-circular canals of the labyrinth affects the state of equilibrium of the body, found, some years ago, its profound interpreter in Goltz, (Pflüger's Archiv III, p. 172, ff.) The present four articles affirm the fact, and are especially devoted to a physical explanation of the phenomenon. Cyon seems inclined to believe, that the three canals stand in relation to the three dimensions of space. The question, most discussed, is the part which the endolymph takes in the function of the organ. According to Goltz it acts directly and only by its pressure, whilst Mach and Breuer reject the theory, as being physically unsustainable. They assume that the nerves of the ampullae must respond to each excitation, (which of course is affected by vibrations of the endolymph,) with a sensation of rotation. It is indubitable, that, by the movements of the endolymph, we are informed of the actual position of the head, and, by this, of the whole body. Each movement of the head causes the fluid contents of one of the canals to flow in an opposite direction, which is perceived as a rotation of the head in the plane of this canal. The slightest injury producing abnormal currents, (by an effusion of blood or an emission of the endolymph,) immediately embarrasses the correctness of our judgment. This is only temporary and of but short duration, when the injury is one sided, but permanent, even after a perfect healing of the wounds, when the canals on both sides are damaged. As the organ for rendering possible a perception of the stabile position of the head, and its rectelinear movements, Dr. Breuer claims the otolithes and their relation to the macula acustica. All authors agree with the words of Goltz: "The semi-circular canals of the labyrinth are the organs of sense for the equilibrium of the head, and, indirectly, of the whole body."

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BOOK NOTICES.

On Paralysis from Brain Disease in its Common Forms. By H. Charlton Bastian, M. A., M. D., F. R, S., &c., &c. With illustrations. New York: D. Appleton & Co., 1875.

Dr. Bastian is especially qualified for the work which he has attempted. He is the Professor of Pathological Anatomy, in the University College, London, and Senior Assistant Physician to the National Hospital for the Paralyzed and Epileptic. He is well known to the profession by his previous writings. These lectures attracted attention, as they were published in the successive numbers of the *Lancet*. They occupy a field hitherto almost neglected in the text books of medicine, one in which knowledge is much sought after, and the want of it much felt. There are many difficulties in the way of progress in this direction. The small number of cases occurring in the practice of the ordinary physician, and his inability to devote the time necessary for accurate observation, virtually debar him from the field of investigation, and consequently impose this work upon those who have special knowledge and opportunities. All of these requirements are fully met in the case of Prof. Bastian. We do not propose a critical examination of the book. Its scope and aims as set forth by the author, are as follows:

"The lectures deal with the common forms of the affection, in such a manner that you may not only learn the principle variations which are to be met with in the grouping of symptoms, but also how far such vari-

ations are indicative of lesions of different parts of the brain."

For clinical purposes, the localization of pathological changes, rather than their character, is considered of primary importance, principally because the various conditions, as hæmorrhage, softening and pressure from diverse causes, present substantially the same symptoms. The differential diagnosis of causation, is made a secondary subject of consideration.

The volume contains eight lectures; the subject of hemiplegia is treated of, as to its causation, mode of onset, variations, symptoms, sensory impairments, alterations in nutrition, &c. One lecture is devoted to regional diagnosis, one to the cerebellum, its functions and symptomatology of its diseases, and one to the prognosis and treatment of hemiplegia.

In this notice we have mentioned the ability and opportunity of the writer, and the subject which has engaged his attention. The result is the book before us, and is such an one as we might have expected from the preceding favorable conditions. It constitutes a foundation upon which may be erected a superstructure which will substitute the exactness of scientific knowledge, for the uncertainty of theory and experiment.

Cholera Epidemic of 1873, *in the United States. The introduction of Epidemic Cholera through the Agency of the Mercantile Marine: Suggestions of Measures of Prevention.* By John M. Woodworth, M. D., Supervising Surgeon U. S. (Merchant) Marine Hospital Service. Government Printing Office, Washington: 1875.

This report is made pursuant to a resolution of the Forty-third Congress, empowering the supervising surgeon of the United States Marine Hospital Service, in connection with a medical officer of the army, to confer with the health authorities and resident physicians of

such towns, as were visited by the cholera epidemic of 1873, and to collect as far as possible, all facts of importance with regard to such epidemic, for the purpose of making a report of the same, to the President of the United States, to be submitted to Congress.

Dr. Ely McClellan, Assistant Surgeon United States Army, was detailed by the Secretary of War, to assist Dr. Woodworth in the preparation of the report.

It consists of three separate reports. a, History of the cholera epidemic of 1873, in the United States, by Ely McClellan, M. D., Assistant Surgeon, U. S. A. b, History of the travels of Asiatic cholera in Asia and Europe, by John C. Peters, M. D., of New York. The same, in North America, by Dr. McClellan, and c, Bibliography of Cholera, by John S. Billings, M. D., Assistant Surgeon, U. S. A.

This is a most condensed and exhaustive report of the whole subject of cholera. The historical part of it gives information of the various epidemics in all countries. The bibliography of the subject, fills more than three hundred pages. Of the special epidemic of 1873, the facts and circumstances are minutely detailed. The conclusion drawn from the investigation is, that cholera is brought into the country in vessels from foreign parts; that it can be prevented by proper hygienic measures, and by "*prompt and authoritative information to threatened ports, of the shipment of passengers or goods from a cholera infected district.*"

The importance of such a report to the medical profession, in case of the invasion of the disease, can not be computed. The government has laid the physicians of the country under a lasting debt of gratitude for this work.

Materialism. By J. M. Winne, M. D., M. R. C. P. London: 1875. Originally published in the *Journal of Psychological Medicine*, April, 1875.

The treatise is written in opposition to the views of materialists in general, and in particular to combat the address of Dr. Tyndall, before the British Association. He has made some strong points, and told some truths regarding the tendency of this school of thought.

"The modern materialistic school has done incalculable mischief, morally as well as scientifically, not only by spreading widely the flimsiest hypotheses, as if they were established truths, but even the English language is getting corrupted by the new philosophical nomenclature that has been adopted in the endeavor to make the new theories intelligible."

Transactions of the College of Physicians of Philadelphia. Third Series, Vol. I.

It contains twelve papers read before the college during the year. Among them are the autopsy on the Siamese twins, and a report upon the surgical considerations in regard to the propriety of an operation for their separation. The other papers relate to the subjects of surgery, practice and materia medica.

A Supplement to the late Asylum Controversy, by Members of the Medical Society of Washington Territory. Olympia, W. T. 1875.

PAMPHLETS AND REPORTS.

On the Morbid Changes Occurring in the Blood Vessels of the Brains of the Insane. Ringrose Atkins, M. A., M. D., Assist. Med. Officer District Lunatic Asylum, Cork, etc. [Reprinted from the *Dublin Journal of Medical Science*, June, 1875.]

This paper was read before the Cork Medico-Chirurgical Association, April, 1875. Dr. Atkins first details

the methods employed in the preparation and mounting of the microscopic specimens which have been the subject of his study, and which he presented for the examination of his auditors. In the various manipulations enumerated, there is nothing of special interest to one accustomed to work in this field. The author treats only of morbid changes in the blood vessels, in this paper, but expresses the intention of dealing, at a future period, with the secondary changes occurring in the other constituents of this organ, viz.; the "cells," "neuroglia," &c. The conditions in the different stages of degeneration are noted in the order of their occurrence. And first, the stage of congestion or stasis, marked by distension and dilatation of the arterioles in which the lumen is in some instances increased in diameter, and packed with dark colored and disintegrating blood corpuscles, the walls of the vessels being in close apposition to the sheath and brain tissue beyond, and their several coats appearing as if thinned and fused together. In other cases the vessels are found quite empty, or with only a few blood globules adhering to their walls.

Should this condition be a persistent one, deposits are likely to take place outside of the vessels, between the outer coat and the sheath. These may be crystals of haematoidin, fatty granular masses, or a finely molecular material which bears a strong resemblance to the spores of the *favus fungus*. (Dr. Batty Tuke.)

Accompanying or following upon these deposits, changes in the walls of the vessels are said to ensue. The continued distension brings about an inelastic condition of the coats, ampullations, fusiform dilatations, and finally true aneurismal acculations take place. From the giving way of the walls thus stretched and changed, hæmorrhages occur. To Charcot and Bou-

chard we are indebted for our knowledge of the existence and character of these miliary aneurisms. Their views of their causation, character and results are succinctly stated, and microscopic specimens presented in illustration. The rupture of the aneurisms is a fertile source of cerebral hæmorrhage, and by the authors just mentioned, is considered as the one organic condition, alone worthy of being regarded as the direct cause of sanguineous extravasation. He next refers to the changes which take place in the effused clot, and directs attention to the condition of the vessels after the subsidence of the congestion and stasis.

"The vessels released from their state of tension recoil as it were upon themselves, and consequently, both their course, and calibre become changed." They assume a tortuous and twisted direction, bending and coiling upon themselves, and in some instances it is said "knots" and "kinks" are found. This condition is most common in the pia mater where there is little restriction from the medium traversed. The change in the calibre of the vessel, especially when passing through the cerebral substance is marked by a clear space surrounding the vessel. The various theories regarding the causes of this condition are given. By some it is considered as the normal perivascular space exaggerated, others look upon it as a dilatation of the cerebral tissue, which its nature is unable to return to its normal state upon the shrinking of the vessel. Others again consider it as the result of contraction from the hardening agents used. Dr. Atkins considers the spaces due to shrinking of the brain tissue from some cause what he does not state. He has observed fine processes proceeding from the vessel across the space. These processes or Deiter's cells as they are called, are said be small filaments running from the

vessels into the cerebral substance for their support, and are brought to view by the shrinkage of the tissue from the walls of the vessel. Obersteiner considered them as a means of communication between a lymphatic space surrounding each nerve cell and the perivascular lymph space surrounding the vessels.

Next are mentioned the structural changes taking place in the coats of the vessels. These are important as upon them depend many of the conditions of malnutrition of the brain. First, we may have all the thin coats thickened; again, in some, the inner coat alone may be thickened, while in others the muscular layer only is hypertrophied. It is said care is necessary in drawing conclusions regarding changes in the fibrous coat, as they may be produced by the agents employed, as glycerine, camphor, water, acetic acid, &c. He presented a specimen, "where by chance the vessel itself had fallen out of its containing canal, leaving the sheath slightly thickened, still adherent to the sides of the space."

Fatty metamorphosis of the muscular nuclei of a vessel with granular masses of a similar nature deposited on its walls is mentioned, and a specimen of this change exhibited. This is taken from the pia mater, and the oil globules are seen dotted over its surface and around it. This condition is considered by Bouchard as a secondary change, although he acknowledges that primary fatty changes do take place in the brain capillaries. The author, however, considers these changes in which the muscular nuclei were occupied by fatty granules as primary in character. The last change noticed is the atheromatous or calcareous, occurring chiefly in the vessels at the base of the brain. These often lead to local softening as in the specimen presented, in which the left middle cerebral artery is seen to be almost occluded by

calcareous degeneration of its walls. Portions of the brain supplied by it were thoroughly softened, and in points almost diffluent. Dr. Atkins concludes his paper with a brief picture of the clinical effects which may follow these morbid changes found in the cerebral vessels.

A Scotch Insane Asylum. [Reprinted from the *Boston Medical and Surgical Journal*, for August, 1875.]

This is a description of the Fife and Kinross Asylum of Scotland, so far as relates to peculiarities in the construction of the building and of the treatment of patients. It contains a letter giving the details written by the Superintendent, Dr. Fraser, in reply to a request from Dr. Chas. P. Folsom, Secretary of the State Board of Health of Massachusetts.

He says, "you ask me for the features which distinguish my asylum. I believe them to be; 1st, unlocked doors; 2d, the great amount of general freedom; and 3d, the great number on parole. In common with the Argyllshire Asylum airing courts are not in use. The great attention given to the occupation of the patients, and the large percentage of those employed, are characteristics of this Asylum, as well as of two others in Scotland."

There are accommodations for 280 patients, and these are classified in twelve wards, five for the men, of whom there are 110, and seven for the women, numbering 140. The doors of all of the men's wards, and of five wards upon the women's side of the house are left unlocked. There is an average of one attendant to twelve patients. Two wards for women are still kept under lock and key on account of the character of the patients. There are no iron window sashes, or iron guards in the house, but the lower sash of the windows

of the sitting rooms are protected by five-eighth inch brass rods running across them.

Occupation is sought for all, even of the disturbed and demented classes. Dr. Fraser quotes from his annual report.

"Attention is being constantly and increasingly directed toward the occupation of both sexes. At the present date, all male patients, with the exception of from five to eight, are sent out every day in parties, arranged according to their capabilities for work. Attendants accompany each set of workers. The head and sick room attendants are the only ones retained in the house. On the female side there are three work rooms. One devoted to the main sewing requirements of the house, and the others to the teaching and encouraging to work of the idle and demented. In these three rooms are above ninety patients. The laundry, the kitchen, and the house generally give employment to about forty more, so that the actually idle are reduced to a minimum."

His testimony is decided and outspoken against the use of airing courts for women. It is summed up in this; "the airing court system permits every insane propensity to run to weeds." This plan of great freedom, and unlocked doors coupled with constant occupation it is claimed, results; 1st, "in greater contentment and general happiness among the patients; 2d, better conduct in every one, i. e., less excitement; 3d, the preservation of the individuality of each patient; 4th, less degradation; and 5th, greater vigilance and care on the part of the attendants."

This is certainly a good showing, and we are glad to know that this plan has been so successfully inaugurated and carried out. The greater freedom that can be allowed, consistently with the proper care and treatment of the insane, the better. We gladly hail every step in advance, but before we could advocate the adoption of such a system here, it would be necessary to make a comparison of the classes of patients received

into the institutions of this country with those in Scotland, and be sure of an advantage to be derived by sending the feeble demented classes out in squads to do pretended labor, for in most cases it must be a mere pretence, over allowing the relaxation and freedom obtained by voluntary exercise in pleasant airing courts, under proper supervision. There are also many other questions which would require a favorable response before we could consistently urge the trial of unlocked doors and compulsory occupation for all.

On Periodical Melancholia By WILLIAM B. NEFTEL, M. D. A paper read before the New York Medical Library and Journal Association. [Reprinted from the *Medical Record*, of August 14, 1875.]

This paper consists of the recital of a case of periodical melancholia, together with some interesting remarks, regarding this form of disease. The case was treated by electricity, by galvanizing the cervical sympathetic. The peculiarity of application, to which the author attributed success, was the production, by the polar method of a condition of anelectrotonos, (or diminished irritability, by a strong current,) of the cervical sympathetic. This was employed after the failure of all other methods of applying electricity. The patient had been subject to repeated attacks during a period of twenty-three years; the last, however, yielded after treatment of less than two weeks duration. We quote some of the general remarks on the character of the disease.

To Guislain belongs the merit of having elucidated the fact that the great majority of all mental diseases begin with a melancholic stage, while Griesinger treated this psychical affection (psychosis) in close relation to nervous diseases in general, and Krafft-Ebing*

* Krafft-Ebing. Die Melancholie. Eine klinische Studie. Erlangen, 1874, p. 3.

pointed out the analogies of melancholia and neuralgia. Indeed, melancholia can be considered as a psychical pain, a neurosis, a psychical neuralgia of the sensory centers in the cortical substance of the brain, analogous to the neuralgias in the sensitive sphere of the cerebro-spinal axis. In neuralgias the irritability of the affected nervous apparatus is so much altered that the slightest external excitations, mechanical, atmospheric, etc., which would not be felt in the healthy condition, cause great pain. Even those slight but continuous excitations which depend upon the processes of circulation and nutrition, and are therefore normal stimuli, and quite imperceptible in the healthy condition, become a constant source of intense pain in neuralgia. The same is the case with psychical hyperæsthesia, called melancholia, with the only difference, that in neuralgia the affection is in the sensitive sphere, and manifests itself as bodily pain; in melancholia it is in the psychical sphere, and is felt as psychical pain and depression of spirit.

In the first case the pain is produced by external stimuli, mechanical, atmospheric, etc.; in the second, by psychical perceptions, ideas. In both cases a sympathetic affection in the motor sphere is apt to follow. Thus the part affected by neuralgia is instinctively kept immovable; in like manner the melancholic, affected by psychical pain, lacks power of will, energy and courage. Again, the convulsive movements which sometimes accompany neuralgia have their analogy in the psychomotor impulses for acts of destruction so often noticed in melancholics. Lastly, both conditions, neuralgia and melancholia, are sometimes combined in the same subject, and both are often caused by a hereditary disposition, the neuropathic constitution.

We have to distinguish two classes of melancholic affections, melancholia without delirium, and melancholia associated with insane ideas, delusions; though there are intermediate forms, and the first can pass into the other. Characteristic of melancholia is the impossibility for the psychical organ to produce any but unpleasant sensations; in other words, it responds with painful emotions to every impression, even to such as otherwise would be quite agreeable. As all the impressions from the outer world are felt in a most painful manner, everything appears to the patient changed and gloomy, and becomes an infinite source of psychical pain. "The painful perception of the outer world," says Krafft-Ebing,* "manifests itself clinically in a passive manner; at the beginning the patient seeks retirement, avoids all association, and remains

* Loc. cit., p. 5.

secluded; but afterward he becomes aggressive towards persons and things." His relations to the surrounding world have now entirely changed; he finds no pleasure in anything, nor can he be touched by the misfortunes of others, his own distress being much more intense than all beside. Thus he lives in constant solitude and apprehension. In cases of melancholia without delirium, the intellect remains intact; but as every psychical act augments the psychical pain, the patient avoids all occupation, becomes inert, undecisive and brooding over his own sadness. He feels weak, his sleep is insufficient and unrefreshing; he has headache, palpitation of the heart, bad appetite, and constipation; he loses flesh and becomes anæmic. All the morbid symptoms generally exacerbate in the morning, and with female patients especially during menstruation, while toward evening a slight remission sometimes takes place.

If the melancholic condition is not relieved spontaneously or by the efforts of art, or if it has not passed into some form of insanity, the patient usually becomes convinced that there is no remedy for his grief, and, driven to despair, he attempts, and often commits suicide. * * * * * * *

Melancholia is sometimes accompanied by an intense distress in the precordial region, with palpitation and irregular action of the heart, epigastric pulsation, and other symptoms in the sphere of the vaso-motor nerves—pallor and flushes of the face, cold extremities, contracted pulse, etc. These phenomena must be attributed to the cardiac plexus, and depend very probably on a vaso-motor spasm of the cardiac arteries, as in some cases of angina pectoris. Attacks of precordial distress in a moderate degree, happen, in my opinion, in every case of melancholia. In their highest development, (melancholia præcordialis,) these acute attacks, more than any other variety of melancholia, are apt to drive the patient to despair, to loss of mind, and to acts of destruction against things, persons, or his own life. * * * * * * * *

As the delusions originate from, and are constructed upon the most unpleasant sensations of the patient himself, they must necessarily be of a painful nature. Thus, the intense precordial distress, which even in a healthy person is associated with fear, dreadful apprehensions, etc., in the melancholic gives rise to delusions of danger, of persecution and of death, embracing every imaginable variety of human misery and suffering.

A most frequent source of delusions in melancholics, are hallucinations, which, as may be easily understood, occur sometimes in

such nervous and exhausted persons. The patients hear voices announcing their cruel fate; they see bad spirits, or murderers threatening them; morbid gustatory sensations suggest the idea of being poisoned by enemies, etc. Such hallucinations are also the principal cause of the perverted and dangerous acts of melancholics. "Not unfrequently," says Krafft-Ebing,* "is suicide or homicide their direct consequence, and a desperate act of self-defence against imaginary persecutors. Sometimes the decision to remain mute and refuse all nourishment is induced by a hallucination—a voice prohibiting food and speech." Melancholia, with delusions, if not cured, ultimately passes into the passive or active form. In the first variety (melancholia passiva, attonita) the indecision and loss of energy in the patient leads to a complete abolition of all voluntary activity.

Those who have recovered from this affection describe the feelings of terror and suffering they have endured while in a state of obscured consciousness somewhat similiar to a dream, and while unable to perform the simplest act, having lost all voluntary power. They, therefore, remain motionless in bed or in a corner, and finally scarcely react to external excitations. It seems as if there were an insurmountable resistance to the psychomotor conduction. In the highest degree of passive melancholia, the patients are in a state of catalepsy; the limbs are flexible as if of wax (flexibilitas cerea,) and can remain indefinitely in any given, even uncomfortable position, following only the law of gravitation. There is a high degree of muscular and cutaneous anæsthesia and analgesia, and abolition of reflex irritability; but the vegetative and automatic functions, though considerably weakened, still continue. The eyes express anguish and awe. In the state of passive melancholia, the patients do not remain longer than a few months. Sometimes they are suddenly relieved from it as if awakened from a profound sleep; or they pass into some secondary form of insanity, or die during the acme of the disease from paralysis of the nervous centers.

In direct opposition to the passive melancholia is the active variety (melancholia activa, agitans.) The patient affected by active melancholia instinctively tries, and sometimes succeeds, to relieve his psychical pain and distress by muscular activity, by constant agitation and locomotion. It seems as if the patient, at the height of his suffering, and by enormous efforts, succeeds at last in overcoming the resistance in the psychomotor sphere, at least for a while. During such a paroxysm of agitation, he runs

* Loc. cit., p. 37.

about in despair, trying to destroy everything, his consciousness being partially or totally obscured.

The active melancholia, if not relieved in a short time, leads to death by exhaustion, or else passes into incurable dementia. * *

From the study of the attacks in *periodic melancholia*, I have every reason to believe that the direct cause of melancholia is anæmia of the brain, perhaps only of some part of its cortical substance, induced by a vaso-motor spasm. This assumption is corroborated by the fact that the melancholic attack is accompanied by other phenomena in the vaso-motor sphere—the contracted pulse, the pallor and flushing of the face, the cold extremities, and especially the precordial distress, which latter in the form of angina pectoris, Landois and Nothnagel have shown to be sometimes a pure vaso-motor-neurosis following a general spasmodic contraction of the arteries. The alteration of nutrition, the loss of flesh, and the other symptoms of melancholia, are the consequences of cerebral and general arterial anæmia, as I have had the opportunity of observing in the case of periodic melancholia. Of course it is not probable that a spasm should last during the whole melancholic attack, but judging by analogy of other spasmodic affections, the spasms may follow each other in more or less rapid succession, while their effect, which is the nutritive alteration of the brain, may continue during the intervals between the spasms. By admitting this theory, which is based on facts, the phenomena of melancholia can be satisfactorily explained, and the treatment becomes more rational and successful. * * * * *

As regards the treatment of the disease itself it is necessary to bear in mind that the psychical organ in this state is unable to produce any but painful sensations, and therefore all kinds of excitation, all impressions, even pleasant ones, have to be avoided, and the patient must be advised to keep quiet bodily and mentally. A few days' rest in bed is sometimes the most beneficial remedy. Exercise, traveling, admonition, and religious consolations only aggravate the psychical hyperæsthesia. On the contrary, everything that produces relaxation of the vaso-motor spasm, and congestion to the brain, acts beneficially. Thus prolonged tepid baths and above all opiates, though only palliatives, often make life endurable, especially in the variety of melancholia with great precordial distress.

Other remedies which act similarly may also be tried, like inhalations of ether, chloroform, nitrite of amyl, chloral, etc. I have not tried alcohol, which also produces congestion to the brain, on account of its secondary injurious effects upon the system. Being

absorbed by the blood, alcohol retards the oxidizing processes and the tissue metamorphosis, which seem already weakened during the melancholic attack.

From my own experience I have every reason to believe that the most efficient remedy to abolish the vaso-motor spasm, to regulate the circulation of blood in the brain, and to improve its nutrition, is the galvanic current, applied according to a certain method the details of which will be given in a separate paper.

Transactions of the American Association for the Cure of Inebriates. Held in New York, September 24, 1874.

This report of the proceedings of the Association, at their annual meeting, is one of considerable interest, which attaches especially to some of the papers read. If the views presented in these were generally accepted, there would be no call for the further establishment of Inebriate Asylums, or indeed for the continued existence on the same basis, of those already in operation. The danger which threatened from the enunciation of some of the views presented, was clearly seen by the members of the Association who hastened to disavow them as the sentiments of the *meeting* and even moved to return one of the papers to the writer for "modification," as by the following resolution.

"Moved that the report of the Franklin Reformatory Home for Inebriates, Philadelphia, be accepted by the Association, and referred to the Committee on Publication. As the report did not fully accord with the published theory and views of the Association, it was closely criticised by several members, and it was further moved that the committee be instructed to return it to Dr. Harris for modification."

If Dr. Harris toned down his paper, at all, the first draft must have produced a shock to the sensitive nerves of those who sustained the resolution. He says, "as we do not either in our name or management recognize

drunkenness as the effect of a *diseased* impulse, but regard it as a habit, sin and crime, we do not speak of cases being cured, as in a hospital, but "reformed." Again, "while we do not regard drunkenness as a disease, there are few drunkards in whom the habit has not deranged one or more organs of the body; and hence we are obliged to treat many of them for sickness of the stomach, vomiting, diarrhœa, hæmorrhage from the bowels, &c. We must separate the habit from its secondary physical results. Alcohol is a poison, and aside from intoxication, as a primary consequence of an over-dose, we have secondary effects, in the way of a loss of appetite, insomnia, nervous prostration, inordinate thirst, &c., which, although diseased conditions are not a part of drunkenness itself, but manifestations of an indulgence in the habit."

After this physical condition has been met and overcome by appropriate treatment, he adds. "But he is *morally* the same drunkard that he was before, unless you have in some way touched the root of the evil in his moral nature."

"It is one thing to treat drunkenness, and another to reform the man himself. Drunkenness is only a manifestation, an effect, a consequence, but what produces it? We say alcohol." "What we have to deal with in the Franklin Home is not drunkenness so much, as the train of thought and feeling which induces a man to drink to drunkenness. We have to deal with a cause and to remedy it; rather than an effect manifested in a blunted moral sense and derangement of the physical health. If this effect is a disease, it is easy to remedy it, and make the man to all appearances healthy, but what are we to do with the cause? The antecedents, the cause and the consequences can not all be the disease. So many men all over the world drink, that

it would almost appear to be a normal thing for a man to do this; and it is only when we view the practice as the result of sin, that it can be properly understood. If the Almighty punishes as sin, what we regard as the effect of an irresistible disease, either He is unjust or we are in error."

In this, we think Dr. Harris has struck the key note that inebriety is not a disease, but a sin. The answer to the question, what treatment promises the best results is given in the paper by Dr. Crothers, on the management of inebriety at the Albany Penitentiary. The statistics of this institution, show that of the 24,590 persons committed during the twenty-seven years of its existence, 22,377 were inebriates, a greater number than have been received into all the inebriate asylums of the world.

With such an extensive experience in the medical care of this class, and, though recognizing it as "a disease of both the mental and physical powers," the treatment which is recommended, is only that of punishment for crime, viz., the ordinary prison discipline, or rather the extraordinary discipline which has given this institution a national reputation. To give the doctor's own words. "From these notes and records, it is proposed to show, that sharp military restraint and occupation of both body and mind are essential in the successful treatment of inebriety." Again, "the experience and success of this institution among the worst and least hopeful of patients, founded on two principles of military discipline, and occupation of body and mind indicate the most hopeful promise of future results." "The hints embodied in these facts, if carried out practically in an asylum, would be a clearer literal answer than is usually given to the oft repeated question." "Can you really cure a drunkard."

A Statement of the Relations of the Faculty of Medicine and Surgery in the University of Michigan to Homœopathy.

This embraces a historical sketch of the efforts made to impose upon the University Medical College, a homœopathic school of instruction, and also gives an account of the present condition of affairs. The Homœopathic Medical College, as now organized, under the management of the Board of Regents, consists of two professors, one of "Materia Medica and Therapeutics" and one of the "Theory and Practice of Medicine." The students attend the lectures upon the other branches, anatomy, chemistry, &c., in the regular Medical College where they are duly examined "by those who teach them, and are to have their knowledge or want of *knowledge* in *those departments* certified to." There is no further or more intimate connection between the two schools.

The professors desire, in self-vindication to lay these facts before the profession as they have been assailed in certain quarters for retaining their connection with the college. The view which they take of the subject, is that homœopathy must stand or fall by its own merits or deficiences, and that these will be the more apparent by the position in which they are placed, and again that it would be an injudicious and cowardly act to desert the field and give up the contest at this time.

A Series of American Clinical Lectures. Edited by E. C. Seguin, M. D., Vol. 1, No. 7. *Capillary Bronchitis of Adults.* By Calvin Ellis, M. D., Jackson Professor of Clinical Medicine, Harvard College.

This series is published by Putnam & Sons, of New York, and embraces lectures on various subjects by some of the most noted clinical teachers and professors in this country. They are intended to present in com-

pact and economical shape, the most advanced thought, combined with practical instruction. They are published at an average cost of forty cents per number, and are prepared with reference to being bound together. The lecture to which we have referred in this notice is one of special interest and importance.

Rules and Regulations of the New York City Asylum for Insane, Ward's Island. Compiled by Dr. A. E. MACDONALD, Medical Superintendent, and approved by the Commissioners of Charities and Corrections, September, 1875.

These rules and regulations make some important changes in the organization and government of the Hospital. The medical superintendent is recognized as the responsible head, and as such is invested with authority over all the officers, attendants and employés. In place of a warden, who had full control of the conduct of the Hospital, outside of the mere prescribing of medicine, is substituted a steward, who is subordinate to the medical officer. This places the Institution upon the same basis as the State asylums throughout the country, and will result not only in multiplying its efficiency, but in putting a stop to those abuses and evils which were inseperable to a divided responsibility. The patients, the superintendent, and the commissioners are to be congratulated upon such a radical change, which lessens the dangers to the former, and promotes harmony of action between the officials to whose care they are confided.

Fracture of the Inferior Maxillary Bone. JAS. F. MONTGOMERY, M. D., of Sacramento, Cal.

This is the record of the successful treatment of two cases of multiple fracture of the lower jaw. A description of the apparatus employed is given, and also the bibliography of the subject. Great credit is due Dr.

Montgomery, both for the ingenuity exhibited in the origination of splints adapted to each case, for his skillful treatment of them, and for putting them on record for the benefit of the profession.

Hospital Construction. By EDWIN HUTCHINSON, M. D., of Utica.

This paper was read before the State Board of Charie of New York, in January last, and received the approval of that body. It contains a statement of the principles which should govern in the construction of hospitals, and the plan in perspective and in detail of a proposed hospital in this city. The plans are fully explained, and embody the most advanced views upon the subjects of heating, ventilation, and arrangement of the wards and service rooms. We heartily commend it to the attention of the profession.

The Extension Windlass presented to the American Medical Association, May, 1875. CHARLES DENISON, Denver, Colorado. [Reprinted from the *New York Medical Journal*, May, 1875.]

This is the description of an apparatus originally devised for the treatment of fractured patella, but which has since been simplified, and is now presented as applicable to all fractures when the use of extension is called for in their treatment. It is claimed to be simple in application, inexpensive and of great service to the surgeon.

A Study of the Normal Movements of the Unimpregnated Uterus. ELY VAN DE WARKER, M. D., Syracuse, N. Y. [Reprinted from the *New York Medical Journal*, April, 1875.]

A Lecture Delivered at the Opening of the School for Nurses in Charity Hospital, New York City, August, 1875. On the care of patients in the surgical wards, and the best means of saving life in certain cases of emergency. Prof. JOSEPH W. HOWE, M. D., Visiting Surgeon to the Hospital.

Annual Oration before the Medical and Chirurgical Faculty of Maryland, entitled, Contribution to the Medical History and Physical Geography of Maryland. JOSEPH TONER, M. D.

The Influence of the Climate of Colorado on the Nervous System. CHARLES DENISON, M. D., of Denver, Colorado. [Reprinted from the *Archives of Electrology and Neurology*, for November, 1874.

Mechanism of Reflex Nervous Action in Normal Respiration. AUSTIN FLINT, Jr. [Reprinted from the *Chicago Journal of Nervous and Mental Disease*, April, 1875.]

Preventive Medicine, an Address Delivered before the Medical Society of Erie Co. CHARLES C. GAY, M. D. [Reprinted from the *Buffalo Medical and Surgical Journal.*]

SUMMARY.

Dr. George Syng Bryant, Superintendent of the First Kentucky Lunatic Asylum, died on the 23d of June, 1875. He was recognized by his medical brethren as a learned member of the profession, a diligent student, a laborious observer, and a frequent contributor to its literature. By the Managers of the Asylum, he was commended as a faithful, energetic and devoted officer, who was constantly at his post of duty, ever anxious to relieve suffering, and tender and kind in the discharge of the delicate and difficult task of caring for the unfortunates under his charge. We can add nothing to the words of praise and regret which have already been expressed.

—Dr. R. C. Chenault has been appointed Superintendent of the First Kentucky Lunatic Asylum, *vice* Dr. George Syng Bryant, deceased.

—In the April number of the JOURNAL, we recorded the resignation of Dr. Joseph Workman, of the Asylum at Toronto, Ontario, to take effect at an early day. There were numerous applicants for his position, both from the States and from Canada, who presented strong testimonials of qualification, but choice was made by the government officials, of Dr. Gowan, of Dundee, Scotland. The Toronto *Mail*, of September 13, says: "It was rumored that long before this appointment, the Doctor had evinced symptoms of mental derangement, but which the organ government called mental prostration." Whatever his previous health, the superintendency of the Toronto Asylum proved too much for him, as within two months of his appointment it is said he attempted suicide, by taking ten grains of morphia, and that his life was only saved by the exertions of several medical gentlemen. He then left his post, and returned home. The opportunity of reading the government a lesson, on the dangers and evils of foreign appointments, was not allowed to go unimproved, and the case of the unfortunate Dr. Gowan, was used to point the moral. We hope the Doctor may recover his health, and never again assume such responsible and arduous duties, for we believe that "*sana mens in sano corpore*," is imperatively demanded in the person of a superintendent of a lunatic asylum. He must be above the suspicion of a mental taint, if he would retain the confidence of his patients or of the community.

Dr. Metcalf, who was for four years clinical assistant to Dr. Workman, and retained a like position under Dr. Gowan, has been appointed acting superintendent.